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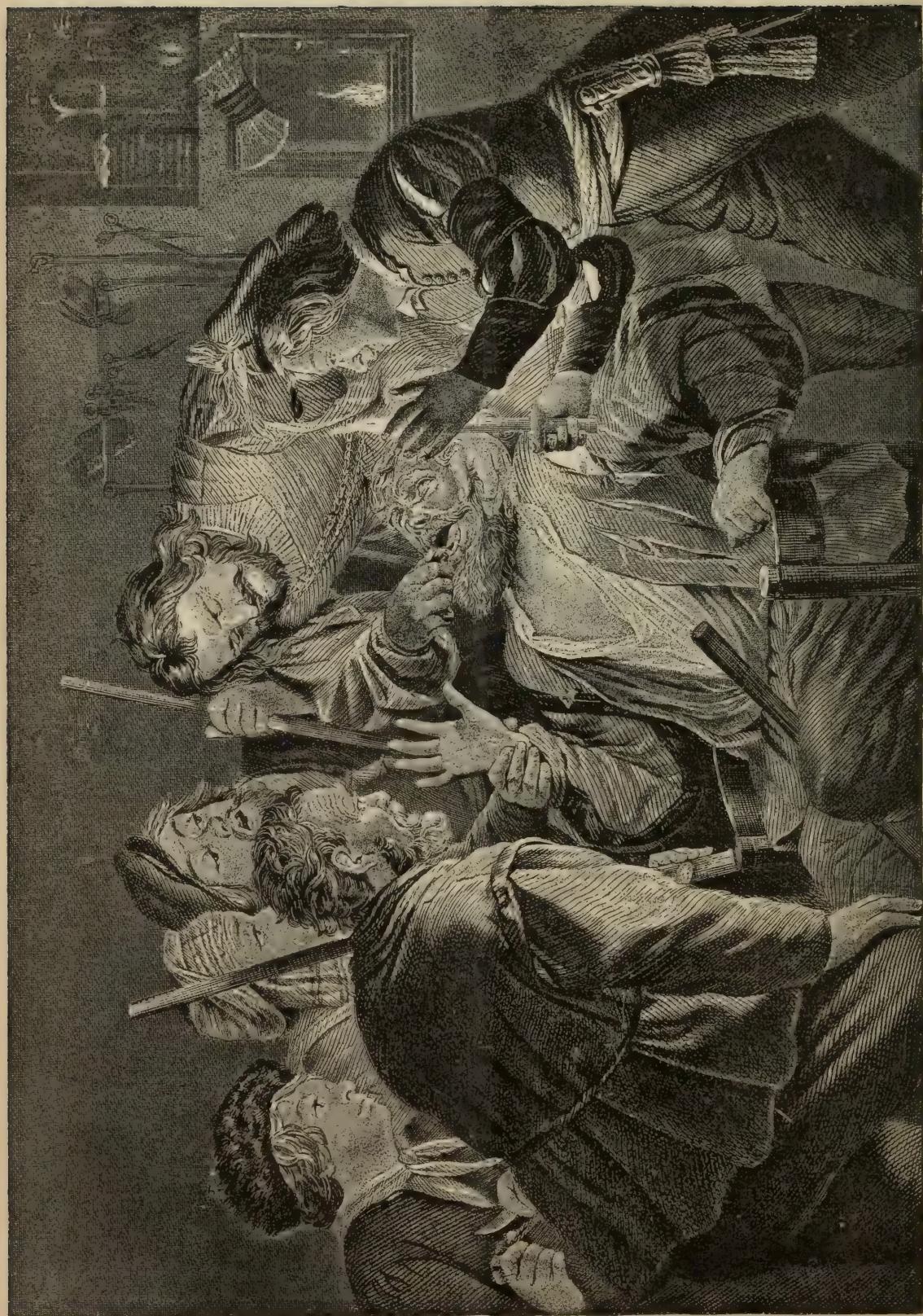
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CONSTITUTIONAL CONDITIONS AND TREATMENT, AS RELATED TO THE PRACTICE OF DENTISTRY.

Read before the Connecticut Valley Dental Society, by C. T. STOCKWELL,
Springfield, Massachusetts.

MR. PRESIDENT AND GENTLEMEN : The subject that I have chosen as the theme upon which to write a paper for this occasion, is one so broad and comprehensive in its scope, so intimately connected with much that may be considered speculative and obscure, that it may seem almost like personal arrogance, on my part, to adopt it. I have, however, written it, not assuming to *instruct* a body of men, most of whom are older and wiser than myself, but rather in the spirit of *inquiry*, thinking that, possibly, it may serve to open the way to a discussion upon a most fruitful and important field that is, at least, closely allied to our specialty.

That the teeth are, to a very great extent, dependent upon constitutional conditions is a fact generally acknowledged. The hereditary law is as absolute in relation to the *teeth* as to other organs. Man has but one body, and though it be divided into *parts*, each has the same life, is supplied by the same nerves, and has a common system of nutrition and waste. There may be *exceptionable cases* where *individual organs*, or *parts*, are, or seem to be, perfect, while the *general whole* is enfeebled and exhibits marked manifestations of wrong life. Also, there may be, and are, lesions of *certain parts* that include the *dental organs* in their baleful influences, while the *general health* is good. But it may be stated, as a rule,

that the teeth are found to be in close sympathy with the general condition.

Man has but one life, and the life principle is the same for all parts. The *normal* manifestations of this life we call health ; the *abnormal* manifestations we call disease. Disease, then, may be denominated wrong life; and all parts of the whole must be affected, more or less, directly or indirectly, by a material wrong of any part, especially when this wrong is manifested in *vital functions*.

This being true, it seems evident that the dental practitioner should give careful and intelligent attention to constitutional conditions. And not this alone, but he should study them also, with reference to the *administration of remedies*.

Have we not, as a profession, practically been too much in the habit of practicing by rote, or, in other words, are we not, *practically*, simply "tooth jewelers," rather than what we should be, tooth physicians?

Can the dentists do nothing else to arrest or alleviate this universal destruction of dental tissue than to prepare and fill cavities? Is this *all* that he can do? And is this all that he may justly claim a professional *fee* for doing?

It may be claimed that more is already done ; that we cleanse the teeth, treat the gums, attempt to correct local conditions that promote decay, &c., and that the patient is given instructions regarding the proper care of the teeth, in order that future decay may be forestalled. All this is admitted. Many do this, and some more than this, perhaps. But is this, even, universal? Indeed, I fear we should be much surprised if it was actually known how few make it a conscientious practice to give their patients proper advice in relation to the matter of *thorough cleansing*, to say nothing of such other various conservative courses as may be adopted to the future advantage of the patient.

This is so, generally, I imagine, partly because whatever of such advice is given is considered a *gratuity*, and mistakenly so considered. How many of our "Registers" show charges for prescriptions, or advice, to our patients? Are not our fees always for operations requiring manual labor? Who of us is so fortunate as to have a class of patients that would not at once question a bill which included a charge for professional advice, although the advice, if faithfully followed, might result in saving to the patient future expense, annoyance and pain, to say nothing of the value and satisfaction of having a sound tooth, or teeth, as compared with mended ones.

The fact that we make no charges for such conservative advice is, I apprehend, the prominent reason why it is so seldom followed to any extent. Our patients place but little value upon it, because *we* value it so little.

There are several prominent reasons that may be named why the dental practitioner should be able to recognize constitutional conditions. The first that I will name is, *that he may make a proper selection of materials for filling the teeth.* The day has passed when any one of the commonly used materials for filling may be considered in every case "*the best.*"—Good judgment should be exercised, ceaselessly, in the selection of materials, and this should be based not alone upon the position of the cavity and texture of the tooth to be filled, but upon constitutional conditions as well. All of us, doubtless, have often put in temporary fillings of gutta-percha or oxychloride of zinc, in certain conditions of the patient, when it was apparent that gold, or other metallic materials were useless for the time being, and afterwards have found that the condition of both the teeth *and* general system had changed so as to *tolerate* more permanent work.

This is often the case with our young patients when their vitality has been so exhausted by excessive application to their studies as to show marked expressions of a lack of tonicity in the teeth, or, in many cases, following long and serious sickness; and, with women, during and shortly after pregnancy. Also, with girls, at the time when they approach, and are passing through, the period of puberty.

In many of these and similar cases I believe there is a decided preference regarding materials that should be used in filling; and to forecast the possibilities of the future, with reference to such cases, requires something more than merely *mechanical* skill on the part of the operator.—Our judgment must be based upon careful observation, and recognized constitutional laws.

Again, *the time when* many operations may be most safely performed depends very largely upon constitutional conditions.

For instance, I would not permanently fill the *pulp* cavity of a tooth when the patient is not in usual health, or when he or she were, from any cause, excessively fatigued or suffering from any unusual disturbance of the stomach or bowels, especially if this disturbance is of a markedly biliary or constipatory character. If such teeth are filled, under these adverse circumstances, I believe the chances for unfavorable results are much enhanced, and one will be fortunate indeed if inflammation and

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abscess does not follow the operation. In fact, I can scarcely conceive of *any* case that may be presented in the course of our everyday practice when we should not take into account actual constitutional conditions, and that our decisions, as to the course to be pursued, should be governed thereby.

But, again, it is *legitimate* and *important* that the dentist should study the constitutional conditions *with reference to the administration of remedies*.

Is it the sole province of the dentist to perform *mechanical* operations upon the teeth? Must he do nothing else? Are not the *teeth*, in any case, amenable to *constitutional* treatment? Do they form an exception to other organs of the body? In cases where there exists an evident *disintegrating diathesis*—if I may apply the term to the teeth—is there no *law or inherent power of reversion*?

Scientists tell us there is such a law, and that the lungs yield less readily than any other organ. But it is a well-accredited fact that reversion, under favorable conditions and intelligent guidance, is accomplished in cases where there is a marked tubercular diathesis, even where the hereditary taint is conclusive for generations preceding.

I have in mind a large family, where the universal tendency of their teeth in each case is so marked, that I think it may be proper to term it a diathesis. The parents, children, grand-children and great-grand-children, all have the same general characteristics clearly manifested in their teeth. The older members of this numerous family, nearly, if not quite all, are wearing artificial teeth. My fight, for four or five years, has been with the rising generation. The teeth are soft and frail, and *white decay*, so called, is prominent. The *constitutional* diathesis is evidently of a scrofulous nature.

In connection with my care of this family, the question has often forced itself upon my mind whether it were not *possible* to *renovate* the *blood*, and thus reach the root of the difficulty. Do the best that I can as regards *filling* these teeth, and combating adverse *local* conditions, the feeling presses home upon myself that I have, boy-like, simply built *mud dams* with which to stem the *ever onflowing current* of destructive tendencies inherent in the system.

Do we, as a profession, stand powerless before such a spectacle? Must we *content* ourselves with building *gutta-percha* dams, *oxychloride* dams, dams of amalgam, or even gold dams? Is there no "*bitter herb*" that possesses the magic power of sweetening these waters, or drying up their fountains?

The fact that there are hundreds of thousands of similar cases in our land, makes a knowledge of the *true conditions of reversion* vastly important. To me, it seems as important that the *dental* practitioner should become an expert in this knowledge as it is in the case of the *lung* specialists, for instance.

Assuredly is this so if the dentist would reach the true *ideal*, and be all to his patients that it is *legitimate* and *possible* that he may be.

But, it may be said that this is an encroachment upon the physician's domain, and implies a physician's attainments.

That it is an *illegitimate* encroachment, I deny. That it implies *more* than the average physician's real, or even supposed attainments, I admit; but is this too much to require of the ultimate dentist? Is there a Mt. Washington in dentistry, a height beyond which it is impossible to go higher?

The true office of the dentist, it has often been said, is to *save* the natural teeth. By this, it has largely been meant to save the decayed or decaying teeth by his manipulations. But the first and most important office of the dentist would seem to be, to save the natural teeth *from* decay—to forestall and prevent this universal destruction of dental tissue.

Some one has lately said that the Millenium would come when the physicians aim was to *prevent* sickness and disease, rather than to *cure*; this is as true of the dental practitioner. At least, a long stride will have been made in the *direction* of those long-looked-for thousand years, when the physician and dentist have secured this high and noble end.

It requires the cycling revolutions of time to ultimate all great undertakings, but this should not discourage the effort. It is certainly a grand and noble aim, and opens upon a fruitful field for the ambitious and philanthropic. It is, however, clear, I think, that this end is not to be gained by *local* or *mechanical* treatment. We must, in order to attain the best results, look deeper than the *surface* merely.

If we would gain control of a smoldering fire *within* a structure, we must point our extinguishers *within*, and not alone *upon* it. We must reach the *fire*, and combat it, and not satisfy ourselves with the running to and fro after its *reflections* or the *shadows* it casts upon the surface.—And, gentlemen, the fire is within. The pathological conditions of the teeth are, very often, if not always, but the *reflections*, or one of the *expressions*, of the *constitutional* wrong. Give as much credence as you please to the various *chemical* theories, the fact still remains that the most absolute cleanliness and care does not, in every case, prevent the disintegration of

tissue ; while other cases are numerous where the *local* conditions are the most adverse conceivable, notwithstanding the teeth do not decay. Is this fact to be accounted for upon any other basis than a constitutional one ? Is not the wrong in the blood ? and are not the decaying teeth a *resultant*, or one of the *expressions* of this wrong ?

The chemical force is an *active* one, unquestionably, but not the *basal* one. To a very large extent, the chemical forces have their origin in constitutional abnormalities. But, where they do not thus originate, the *constitutional* conditions being perfect and normally vigorous, the teeth are thus equipped with the power of withstanding, or resisting, the chemical agents. It is important, and imperative even, that we combat the chemical auxiliaries ; but our treatment should not stop here. We should as well be able to diagnose the *constitutional* wrong, and direct our efforts toward *its* removal. This seems to me to be a part of the dentists duty, as legitimate as the filling of decayed teeth, or local treatment and care.

Assuredly is this the case when children are placed in our charge ; we should not only watch their teeth with a sharp eye for cavities, but we ought to watch as vigilantly for constitutional wrongs,—wrongs of habit, diet, exercise, &c., which tend to promote and invite the destruction of dental tissue, thereby preventing the necessity for the hard manual labor that is required to *save* the teeth after the destruction has once commenced. The dentist should also be remunerated for this watch, care and study, as liberally as for the labor put forth to save after they become decayed. The patient can better afford to pay for the prevention of disease than its cure ; and it is very largely the profession's fault that they may not now so regard it. One is seldom accorded credit where he claims none.

Again, we need to be able to diagnose constitutional conditions, and also apply the proper remedies, in our treatment of the various *inflammatory* conditions of the teeth and surrounding parts. If we rely alone upon *local* treatment in cases of inflammation of the pulp and pericementum, we shall often sadly fail.

The same general laws that pertain to the treatment of inflammation in *any* part applies to *all other* parts. An inflammation of the pulp of a tooth, or of the pericementum, is amenable to precisely the same treatment as an inflammation of the lungs, brain, &c. We need in all cases of inflammation, of course, to look carefully to the circulation ; for the normal circulation of the blood seems to serve as the basis for the performance of all other functions.

Our fingers need that nice and delicate education which will enable them to correctly interpret the language of the pulse ; for it has volumes to say to him who can read its impressions intelligently. The study of it is one of the most important and interesting.

The probabilities of a favorable termination of local inflammation, in any case, is largely proportionate to the ability to control the circulation of the blood *to* and *in* the part ; and the local processes of disease are severe in proportion to the excited circulation or frequency of the pulse ; or, in other words, as is the frequency of the pulse so is the intensity of the inflammation and impairment of the life of the part, and, also, the danger of an unfavorable termination.

Just in proportion to the variation of the circulation and temperature from the normal standard, is the severity and activity of the disease. The temperature, being dependent upon the circulation, rises and falls with the circulation, or pulse. In therapeutics, therefore, it follows that just in proportion as the circulation and temperature can be brought *to*, and maintained *at*, the normal standard, just in that proportion are the processes of disease arrested, and vital processes re-established. This being true, the importance of an intelligent diagnosis of the circulation, and the necessity of gaining control of the same, is self-evident in all cases to which allusion has been made.

It is not within the proposed scope of this paper to enter into details of treatment. But this much may be allowed, perhaps, in reference to the *constitutional diathesis*, or *reversion* principle alluded to, to wit. : That a true knowledge, and a correct observance of *correct hygienic laws*, are among the very first requisites. By this is not meant the matter of diet alone. Important as this may be, there are conditions, habits, environments, &c., that are equally important and necessary to a favorable culmination of the reversion tendencies that may be inherent in the system.

The centuries during which the old Romans lived and flourished, without the occasion for a physician, was made possible by their simple manner of life. But when an aristocracy arose that departed from their former simple habits, and began to indulge in extravagance in eating, drinking, &c., then the demand for physicians arose.

Thus it would appear that the task before the ultimate physician is a no less one than the revolution of much that we term civilization, and he may well call to his aid the social scientist.

In regard to the inflammatory conditions referred to, the various arterial sedatives may often be used with marked effect.

Veratrum, aconite, gelsemimum, &c., are used in connection with local treatment with much success. The saline cathartics, foot-baths, bromide of potassa, hydrate of chloral, &c., are also used in other cases. The diagnosis of each case must determine which, if any, of these remedies should be used.

Specific medication implies a specific diagnosis. A correct diagnosis means but little without a knowledge of a remedy for the wrong life found to be present. If the diagnosis goes no further than to give the wrong condition a name, it amounts to but little. In order to gain the advantage to be derived from a careful and correct diagnosis, a knowledge of a remedy must follow. This, however, must be a task for each individual to undertake for himself; and it will afford him a life-long study and a field for the closest observation and investigation.

If you will permit me to cite one or two cases in practice that illustrate, in part, that to which I have endeavored to call your attention, I will weary you no longer.

The first was of a young lady of exceedingly nervous temperament. Among several other teeth, I filled, after several days of treatment and patient waiting for favorable conditions, a superior cuspid, including the pulp cavity. Other work remained to be done; but I dismissed her for several days, to await developments, not daring to aggravate her nervous sensibilities further by continuing work upon other teeth. I gave her such instructions as precautionary measures seemed to require, in case of any uneasiness about the tooth.

On the third day, about 3 o'clock in the afternoon, she burst into my office like a gust of whirlwind from the torrid zone. Every sail, from jib to rudder, was set, and every hair and feather was lifted vertically.—Well, "the tooth was aching; she had not slept a wink the night preceding, and she had come down to have the miserable thing taken out," &c., &c.

After she had relieved the pent up furies of her mind by a perfect tempest of words, she relaxed sufficiently to take my chair. I found the tooth sore to the touch, and it had ached somewhat, but the pain was doubtless magnified to a considerable extent by the exalted state of her nerves.

My diagnosis called first of all for a *mental* medicine. This secured, the next important consideration was a *good night's sleep*. Could I secure these two things, I felt confident of a favorable result.

The first I was fortunate enough to secure by a few calm words of as-

surance and confidence. When she saw that I was neither surprised or frightened, and that I had no idea of removing the tooth, her fears gave way to hope ; I then felt that the battle was half won.

I prescribed a seidlitz powder to be taken at once, an early retirement, preceded by a foot-bath in warm mustard water, and fifteen grains of hydrate chloral.

She promised implicit obedience, and the next afternoon's mail brought me a note expressing thanks and saying that "the hydrate chloral had performed a perfect cure." No further trouble has been experienced with the tooth.

The second case was that of a girl about fifteen years—one of those fine, delicately organized, nervous, shadowy beings, which seem to hover along the dividing line between the visible and unknown realms,—the mental and spiritual wonderfully developed, with a physical organization despairing, seemingly, of its task.

Three of the molars I filled with gutta-percha. A central superior incisor presented a cavity on the posterior surface, near the margin of the gums, which I filled with gold. This cavity was exceedingly small, and I had no apprehension whatever in regard to it. She went on a visit in a few days, and was gone nearly a month, during which time she took a cold, and probably over-exhausted herself, and, as a result, came home sick.

The next morning her mother called, and stated her case, together with the fact that the central incisor which I had filled was troubling her quite seriously.

I at once, upon the request of the mother, called upon the young lady, and found her tossing upon her bed, cheeks flushed, eyes vividly bright, with contracted pupils, and pulse rapid and vibratile, having passed a sleepless night preceding. The tooth was sensitive to the touch and cold, and the patient *exceedingly* apprehensive in regard to it. Her mind seemed centered on that tooth as the sole cause of her dilemma.

I at first thought I would remove the filling, but owing to the exceeding nervous condition of the patient, and her extreme dread of having even that operation performed, I concluded to try conservative treatment. Happily I found that the mother, who is a lady of unusual intelligence, had commenced the gelseminum and aconite treatment, in small doses. This I directed to be continued, and applied to the gums iodine and aconite in equal parts. Upon leaving my office, in the afternoon, I called again, and, in addition to the above, for the night,

prescribed a warm foot-bath to be followed by fifteen grains of bromide of potassa ; and, in case sleep did not follow in the course of an hour or so, a repetition of the bromide of potassa.

My directions were followed—the second dose of bromide, however, being required—when a good night's rest followed and the morning revealed a marked improvement, and a speedy restoration ensued. No trouble has again occurred with the tooth.

Now, in both of these cases there were, I think, two important elements that entered into the process of cure : First, that which tended to control the *circulation*, and secondly, *rest*.

In the first case cited the *circulation* was effected by the saline cathartic and foot-bath, and *rest* was secured by the use of the chloral.

In the last case the *circulation* was effected by the gelseminum and aconite ; aided, probably, by the foot-bath, while *rest* was induced by the bromide, made easier of accomplishment, of course, by the measure of success gained by the use of the sedatives.

Merely *local* treatment in either of these cases would, I think, have proven futile.

For myself, I have great confidence in the three sedatives named, to wit, gelseminum, veratrum and aconite, *in case where they are indicated*. These do not, of course, complete the list of valuable sedatives, but these I place prominent in the list. I would not, however, be understood to recommend their indiscriminate use. One needs to study their action most carefully, and *more* carefully the *conditions* when they may be *indicated*. I am aware that veratrum is placed under bans, by a certain class of medical practitioners, as being too depressing. I am also aware that another class of practitioners, equally expert and successful, use it with uniform success ; and from what I can learn from all sources, I am convinced that the difference of opinion arises, mainly, from the fact that their diagnosis differs as to *indications*, and also a difference in *doses*. Poisonous doses are, of course, easily possible, but this does not preclude the possibility of medicinal doses. The indications for these remedies must be found, largely, in the circulation, aided, of course, by the expression of the skin, eye, &c. These, if understood correctly, tell the same story. Hence, the necessity for the nice education of the fingers, before alluded to, and the eye as well. But I did not intend to go into this branch of the subject. I do not feel equal to the task ; and, besides, it would require a too great infringement upon your time. My purpose was to simply call attention to what I have termed, “Constitu-

tional Conditions and Treatment as related to the Practice of Dentistry." That what I have said is crude and superficial, none are more fully aware than myself. That many of the theories advanced may be considered visionary and unpractical, I am prepared to expect. But nevertheless, I cannot persuade myself that there is not, at least, a *thread* of truth running through this line of thought that may be worthy of our attention.

DENTAL CARIES AND SOME MODES OF TREATMENT.

An abstract of a Paper read before the Sixteenth Annual Meeting of the Connecticut Valley Dental Society.

BY A. M. ROSS, CHICOPEE, MASS.

If, in our study and treatment of this disease in its multiform expression, we should systematically record the diagnosis, general features and treatment of especially bad cases, would not our methods of practice be more intelligent? As these cases reappear for inspection or further treatment—for the correction of fresh caries, or caries about some of our most painstaking work—the value of such a record would be at once apparent. Such a record is no friend to "*hobbies*." Such a record will lead to a discrimination in treatment that is so essential to the application of our *best efforts*.

The majority of our cases are in heads leading *artificial lives*—heads resting upon bodies cramped up in closely settled communities, following *anything* and *everything* but *natural lives*. The effects of unnatural living are in accordance with the specious departure from the laws governing the *being* in healthful, natural life. Thus we see the manifestations all about us of degeneration and disease, each case presenting its own *individuality*.

If this truth is fully apprehended, we will desire at once to broaden our platform, thus widening our field of usefulness. Our methods are too stereotyped.

How various are the conditions resulting to the general system from acute disease? These results depending upon the degree of vigor the constitution possesses to combat the action of the germ. Take, for illustration, two individuals that I treated, dental caries resulting in both cases as a consequence of typhoid fever: The first, that of a young man

of active temperament—occupation a farmer—who, at the age of sixteen, was prostrated with the fever. The attack was severe and considerable ulceration supervened ; he ran very low, but recovered very rapidly after the fever turned. His teeth were in large and well formed arches, regular, with ample room laterally, but presented extensive *superficial* caries of their proximate surfaces. The teeth thus affected being included in the incisors, cuspids and bicuspids—both above and below—though the superior arch was most affected. By testing the oral secretions they were found to be neutral. Immediately beneath a shallow layer of brown decay, the dentine was found in a state of hyper density—that was sufficiently reduced and prepared for filling with *great* difficulty. A perfectly adapted mechanical defense was all that these cleansed and prepared surfaces needed—*nature* having performed the *cure*. Each and every one of the twenty-two cavities in his case were filled with cohesive gold.

The second case, one not in such strong contrast with the one just cited as might be selected, was that of a miss of fourteen years ; her temperament very similar—active. A year previous to my seeing her, she had suffered with the fever, previous to which time she had enjoyed as good health as her rapid growth and close application to her studies would admit of. I found great disorganization of the dentine, but, as in the first case, more extensive superficially than in depth, excepting the molars. These were deeply affected upon their buccal surfaces. I filled every cavity with gutta-percha. In the one or two cases, where there was pulp complication, I lined with the oxychloride of zinc, and then finished with gutta-percha. There were several reasons for this character of treatment. In teeth possessed of full vitality, the calcified portions possess powers of textural change—the enamel in a more feeble degree than the dentine ; and, by this treatment, nature is given opportunity to fortify. And, as in this second case the enamel was friable, there is nothing under which improvement takes place better or more rapidly than gutta-percha. The oxychlorides are excellent, but they are treacherous, the chemical being more rapid than the mechanical abrasion of its exposed surfaces ; the filling will *look* well, when at the cervical wall the material will be wasted away. Where this occurs, we are all acquainted with the fact that decay is very rapid at the point of loss, and also, we know that this is not true of gutta-percha. This article, as prepared for filling teeth, will decompose in time ; it will wear out ; but so long as any considerable quantity of it remains, the margins of the cavity exposed are

in a *better condition* than as if nothing were in the cavity, and many times they are *free* from decay. These are suggestive facts!

The case of the second party cited, will be continued with gutta-percha—unless something better presents itself—till the teeth are fully matured—till the general body is developed; *then*, all things being equal, excellently adapted gold fillings may be all that will be necessary to ensure their salvation.

Gold, if *understood*, has a *wide* province in the field of action occupied by him who has made its working qualities a study, but it is *worse* than useless outside the limits of that province, and every time it exceeds those limits, disaster sooner or later follows.

A lady patient who, for the past fifteen years, has been under the care of a dentist, and who, semi-annually, has had to undergo treatment: who has had a number of her teeth refilled several times with gold, called upon me, eighteen months ago, with a superior central that had just lost its *seventh* gold filling—the remaining incisors showing decay about extensive gold fillings upon their proximating faces. This lady had suffered for years with gastric trouble, having violent gastralgia as a result of any mental excitement. The teeth were naturally excellent, and though the dentine was extremely sensitive, it was dense. The constant presence of lactic acid in the oral secretions was the cause of chemical action about the fillings—these being as bright as when inserted. I made good stoppings of cohesive tin, after a short period of oxychloride treatment, and the labial surfaces being unbroken, none of the material is exhibited. The fillings (all of the incisors upon their proximating surfaces were treated in this way) have become well *oxidized*, and there is no tendency to decay about them, as yet. The *color* of the dentine about the margins is as pure as at first. In many such cases the temporary treatment should be prolonged. Of one thing we may all be agreed: it is that the non-metallic temporary treatment of carious teeth is, in very many cases, followed too soon with metal fillings as permanent (?) stoppings.

The infiltration of lime salts that obliterate the dentinal canaliculi subjacent to decayed surfaces, must be a process varying in activity in different individuals. The proliferation of secondary dentine over exposed pulps, likewise of varying activity, under the most favorable conditions of plastic treatment. This being true, no doubt many cases thus temporarily treated, are too hastily prepared for the introduction of gold or other metals, not sufficient time being allowed for the completion of na-

ture's *fortifying* work, as applied to the dentine. Particularly may this be true where the temporary treatment is adopted for the simple purpose of promoting density. What the effect may be from this character of temporary treatment upon the enamel, that is disorganized about cavities of decay, is not *absolutely* known ; but Carl Heitzmann, and other able investigators, are satisfied that a delicate fibrous tissue of living matter occupies the interstices of the enamel rods. It is conjectural as to the character of this tissue ; it is reasonable to believe that it conveys nourishment, that possibly in a *feeble degree* the enamel has powers of textural change. I feel satisfied of the truth of these theories from the fact that the enamel does improve—that it does become less friable when nature is given the opportunity to do her work, whatever that may be, in this direction of repair. We all know that the integrity of the enamel must be of the *highest order* to secure the most *permanent* result in the use of gold. We are all aware of the fact, as well, that a successful result in the use of gold depends very largely upon two conditions,—cavity margins, of excellent density, with which a perfect mechanical union is possible, and the interference with those conditions that were productive of the disease. The former condition claims our first attention. If the progress of the disease has been slow, or moderate in action, the enamel margins are generally found not greatly disorganized ; but where the disease has been rapid, moderately or extremely, metals of high conductivity, virgin or alloy, are *not admissible* till there has been such improvement as shall make it possible to obtain perfect adaptation with them. If, then, in our preparation for final operations, we have taken measures to interrupt those conditions productive of decay, brought about tonicity of the general system, lessened the likelihood of acid elimination in the mouth, and in our local preparations—if, in the case of children, waited for greater maturity of the organs, finally, *separating*, thus interrupting the capillary attraction of mucous, that holds in suspension the elements of decay, we will act more intelligently, ever bearing in mind the fact that *gold*, though a rapid and *powerful* cure of *some disorders*, has no *curative* properties as a *tooth filling*.

ECLECTIC PRACTICE IN DENTISTRY.

BY STEWART B. PALMER, M.D.S., SYRACUSE.

Probably a dentist could nowhere be found who would not claim to be eclectic in practice. Indeed, whoever uses more than one material in

filling teeth is eclectic to a certain degree. Notwithstanding this universal claim, there is want of harmony between the extremes. In reviewing recent discussions upon operative dentistry, one is led to infer that saving of teeth is secondary to the means employed for that purpose. There is introduced what is denominated the "New Departure," and with it the *accepted* and *new* departure creeds, which affirm that teeth may be saved by fillings of wholly different materials—a claim well substantiated by practice and well authenticated facts, and of sufficient importance to command attention. As a consequence of such admission, there is to be a greater demand for eclectic practice than has heretofore obtained.

Discussions have already proved that there is some truth and merit in every practice. We welcome any and all means that will help us to acquire truth. In a practical point of view it matters not how it is attained—whether by study and observation, or drawn out by discussions and departures, as sparks are struck from the flint and steel—yet we feel that it expresses a higher type of knowledge when, by the aid of science, we are able to understand the relation of cause and effect, reduce theories to facts, and phenomena to laws.

The "New Departure" is represented as the outcome of investigations which proves the *action of filling material upon dentine*. We are made responsible for the promulgation of this doctrine, which at present seems unpopular, because it is in advance of the professional teachings of the day.

In charity, I believe that all opposition or difference of opinion upon this subject arises from lack of knowledge, or of understanding of the principles inculcated. After another year's observation, I am reassured of the truth of this doctrine, and that it will obtain; therefore, it is not my purpose to pull down an established practice, or even build up a new one. Among the benefits dentistry is to receive from late scientific investigation, is knowledge of the preserving properties of other filling materials than gold; the use of such materials to be determined by individual diagnosis, according to circumstances; in short, an *acquisition* to established practice, not a *substitute* for it.

Upon this broad plane, between the extremes, we should meet in council in search of knowledge to make our operations more successful, and extend the benefits of our profession to a larger number of patients. We are in possession of libraries in which are recorded the successes and failures of the past. Schools are in abundance, wherein a knowledge of present practice may be obtained, while dental literature brings to us in

advance of text-books theories and doctrines for practical consideration. With this accumulation of knowledge and experience, we ought not to consume time in arguments to prove this or that to be the only true method.

Of all the materials used for fillings, gold requires the highest manipulative ability, and most perfect adaptation to the walls of the cavity to insure success—attainments not reached by the average operator. Hence, the varied results. The usual plan to meet this deficiency is to urge thoroughness in operations, recommending the use of some new appliance, instrument, or form of gold; and still the work of destruction goes on, notwithstanding our appliances and best endeavors, and will continue so long as we violate principles in Nature, or fail to understand the action of an *imperfect* metallic filling upon dentine. Firm in the belief that dentistry rests upon principles not to be injured by an increase of knowledge or truth, I wish to recapitulate in the plainest language possible some of the laws relating to the action of metallic fillings upon dentine—laws as beneficial to one method of practice as another. In the outset, I did not intend to introduce the subject of chemical action in the oral cavity; but we find that an eclectic practice is founded upon a knowledge and recognition of all materials in use for fillings. It is apparent that many are prejudiced against the use of plastic fillings, to the injury of teeth, patients, and, too often, the high claims of the operator.

Chemical changes are classified into three divisions: 1st. "Those in which molecules are broken up into atoms; 2d. Those in which atoms are united to form molecules; and 3d. Those in which the atoms of one molecule change places with those of another." All these changes are attended with an electric current. If we call chemical change a force, the electric current is another manifestation of that force; indeed, if the electric force is cut off, chemical change ceases.

Since the first promulgation of this subject, quite a number in high standing in the profession have expressed opinions so at variance with elementary principles relating to chemical changes in the mouth, that we avoid quoting their language, to save the chagrin it might cause; the sentiment of which language was to admit that decay of a tooth is the effect of chemical decomposition, not of oral electricity or other forces. In other words, chemical action is regarded as distinct from occult forces. So long as this opinion is entertained, no scientific advancement can be made. If it were possible that all could know the truth of this matter,

there would be no "departure," for all would understand that the electric current is a phase of any chemical disturbance. For illustration, zinc placed in diluted sulphuric acid is followed by chemical action, the action being decomposed, its hydrogen escaping, its oxygen combining with the zinc, forming an oxide, uniting with the acid, producing the sulphate of the oxide of zinc. All will agree that this is a chemical process. During this change of matter, as in other similar actions, electricity is evolved, as any one having access to a galvanometer can demonstrate.

In experimenting with various elements—metallic and non-metallic substances—the most skeptical must become convinced that chemical action and the electric current are inseparable. This conservation of force does not end here. The current once established, the use to which it may be applied is a matter of choice. For electro-motive force and telegraphing it is converted into magnetism ; when used as a galvanic cautery, it is changed to heat ; for illuminating, to light ; and, when applied to decomposing substances, it reappears in chemical action.

We have used the battery for illustrating some of the phases of chemical changes in matter in general. When it is understood that the same laws obtain in the oral cavity, oral electricity will no longer be denied. With the above explanation of chemical changes in relation to electricity, let us apply the principles to teeth and the materials used for fillings.

The process of decay in teeth is slow decomposition, carried on by a change of the corroding oxidizing fluids in contact with tooth substance. We say change of fluids, because a confined fluid in a cavity—even if it is of a nature to act with vigor at first—would become saturated and inactive, a condition often found under leaky gutta-percha fillings. Any non-conducting material, as gum, or wax, would have the same effect.

The action of the fluids upon the dentine is a chemical change, with no manifestation of a current—a portion of battery, composed of a fluid and one element. The addition of gutta-percha does not complete the battery, owing to its low grade of conductivity : it becomes rather an insulator than an element ; thus the preserving properties of this class of materials consists in cutting off fresh supplies of the corroding agent ; or, in other words, it becomes an insulator to the electric current. Now, let us substitute any of the metals used for filling, and we add a third element to a battery which before had but two—the dentine and the

fluids of the mouth. Bear in mind, we are considering the action produced by imperfect fillings, or fillings introduced into imperfectly organized teeth, the action being the same in either case.

The substitution of any metal for a non-conducting plug is attended with the following results: Although the metal loses or imparts none of its substance to injure the tooth, it becomes a negative element, or pole of the battery, also the conductor or circuit between the negative element, the metal, and the positive element, the tooth. In short, the difference between a gutta-percha filling and a metallic one is this: the former is an insulator, the latter a discharger or conductor of electricity. Where no current passes through moisture under a plug, the moisture is in an electrical equilibrium with the dentine, and is harmless. The presence of a current produces opposite effects.

The *strength* of the current is according to the position of the elements upon the electro-chemical scale; dentine and gold being the extremes. The *constancy* is governed by the degree of oxidation of the plugs; the least oxidizable affording most constant action.

Thus we have endeavored to present some of the fundamental principles most prominent in predetermining operations for the preservation of teeth. We regard a knowledge of these principles as highly important in eclectic practice, and alike beneficial to dentist and patient. I cannot understand why knowledge of these principles should be ignored by those most progressive in every other branch of science relating to our specialty, unless it be from mistaken ideas respecting the change this knowledge would bring about in general practice, or the liberty it would afford for the use of base materials. Principles are not established by a society's vote. Practice will only be changed by convictions of a better method of operating. No radical change is to be looked for or desired in advance of knowledge. Whether rapid or slow, the adoption of a more eclectic practice will alike honor the profession, remunerate the operator and benefit the patient.

Though it may transcend our knowledge, there *is* a best method by which to perform each operation. This implies the employment of proper materials and a knowledge of their properties. This knowledge, practically applied, we call eclectic. Let no one fear to adopt it, nor think it necessary to steady the golden ark of practice.

I have faith in the constituents of the profession in whose hands its dignity rests. Whatever change is made, will be of healthy growth, discarding error and receiving truth. There can be nothing more sacred

than a practice which is the incarnation of a life-work. Any threatened evil should be repulsed like an attack upon private character. However, that which now seems an evil, when viewed from the standpoint of a restricted practice, will eventually prove a blessing—not only to the profession, but to the masses who, by this acquisition, enjoy the benefits of an eclectic practice based upon scientific principles. To this end we labor in search of laws which alone can harmonize contending elements, and upon which must be founded all creeds and practice, the object of which is the preservation of teeth.

19TH ANNUAL SESSION
OF THE
AMERICAN DENTAL ASSOCIATION,
HELD AT NIAGARA FALLS, AUG. 5TH, 6TH, 7TH AND 8TH, 1879.

2nd DAY—MORNING SESSION.

REPORT OF SECTIONS.

SECTION II—CONTINUED.

Dr. SHEPARD, Boston: A large part of the last speaker's remarks were taken up with an oration on philology, and what I must regard as a cavil and nothing but a cavil upon the phraseology of the first resolution. I should suppose that any person of intelligence would understand that the term "good English education," meant a good common school education. I don't presume anyone would suppose that it was meant that a man must understand the English language first, and only; and on that account I was very sorry to hear him say that he was going to move the resolution upon the table. The proper thing to do, it seems to me, is to criticise the phraseology of the resolution, and propose an amendment. If the phrase "good English education" is objected to, let it be some other phrase conveying the same idea. I cannot see that it can be improved, as any man would understand that it meant a good school education, such as would be passed by the graduate of any grammar school. A large part of the discussion upon these resolutions seems to me to have been taken up with faultfinding and grumbling against institutions and professors, or, in other words, the present condition of things. There are always plenty

of grumblers ; we are all of us in that cranky condition : the section that reported that resolution is in that condition. There has been almost nothing said directly upon the adoption or rejection of the resolutions.—I might speak of one error in this connection, which a gentleman has made. He spoke of thirteen dental colleges in the country. I think he must have been asleep the past year, for, if I understand aright, there are sixteen ; three have been inaugurated since our last meeting. One of them is not in active operation, but fifteen of them are in active operation ; so the gentleman is hardly up to the present date in regard to the great increase in the number of institutions for education in this profession. I am in favor of these resolutions. They do not come up to my views entirely. As I regard them, they are very far behind what I would like to see adopted ; but they have been reported by the committee as a compromise. The members of the section have made their little speeches here which they made in the meeting of the section, and, as the result of those speeches in the section, the compromise was adopted. The resolutions do not come up to my idea of perfection. But the first question is : Are they any advance ? The second question is : Are they as far in advance as the association is prepared to adopt ? If they are in advance, they should be adopted ; if they are not as far in advance as the association is ready to adopt, then amend them. In regard to the resolution about the time of practice : the original motion in the section was to put the time back to 1870 instead of 1875 ; but the compromise of 1875 was carried, which opened the door still wider. If the association is ready to vote 1870, instead of 1875, I should most certainly wish they would do so. If the step is too high for the association to take, it can be made 1876, or 1877, or 1878, and so admit a still larger number of those who have no degree. I think a grand mistake will be made by this association at this time, when the doors have been opened for thirty years, if they do not now take the stand that our colleges are not merely institutions for the graduation of men—giving them their diploma simply, but for the great purpose of educating the young men, and bringing them forward in a legitimate and proper manner into the profession by the door, and not through the window, in an improper manner. I think that time has come, and that the association should look after the young men and the new comers, and see that such regulations are made as shall insure their being thoroughly qualified before entering the profession. The first resolution covers the point of a preliminary education. The second resolution provides that a practitioner of

dentistry, who has entered the profession prior to 1875, shall, up to 1885, be entitled to a diploma after having attended one course of lectures in a duly recognized dental school. I hope to see it adopted. The third resolution is all that this association can do as a body corporate in the way of a penalty upon those colleges that refuse to conform to the provision, and that is, non-representation in this association. I hope, therefore, to see these resolutions adopted as they are, or made stronger, if the association wishes to do it.

DR. R. FINLEY HUNT: I must acknowledge my regret that I will not be able to place my views in language adequate to express my feelings. I often regret that I have not a better command of words. But we are all united in one common object, and that is the improvement of our profession—the obtaining of a higher plane for our profession as to qualification. We differ only as to the means necessary to attain that object; and the discussion that has taken place this morning has been mostly upon this portion of the subject. In speaking I intend to speak upon the principles that are embraced in the resolution. It is remarked in the report that the system of dental education is not by any means perfect. The committee recommend in these resolutions what, in their opinion, is the best method of improving the present condition of affairs. Before entering into the merits of the question, I desire to correct a mistake that has been made by a great many gentlemen of our profession, and which was given utterance to by Dr. Crouse, and also in the resolutions or remarks that were made last year upon the subject of a shorter term of pupilage in the institutions. That shorter term was spoken of as an inducement to those who wish to enter the profession to come to these institutions and get their diploma in a short and easy way. A certain college took the ground that the standard for the granting of a diploma was merit alone—qualification and proficiency in all the principles that are necessary for the practice of dentistry. At the same time that college adopted that feature, they also placed the standard of dental education as high as they dared. I will take the liberty of asking our beloved brother, Dr. Atkinson, if the standard of the Maryland Dental College was not as high as any in the country? and every gentleman who presented himself for graduation was required to come up to that standard? The consequence was that the candidate for graduation, who was there only for one term, or the candidate who came up at the end of the term, passed with the same test as the one that had been there for two years. It was the standard of qualification, and not a question of time. That, Mr. President is the true

principle on which to act. We had an examining board there. The students first passed the examination by the faculty, and those who were qualified received a certificate of approval, and were then examined by the examining board, which retained the power of turning back those who in their opinion should not have passed the examination by the faculty. In regard to the first resolution, I heartily agree with the expression of opinion here—that it is an absolute necessity that we should have a preliminary examination by the faculty of the college, who should have the privilege of saying what material should come under their hands for matriculation. If a man cannot read and write, if he does not understand the English language, he certainly is not qualified to learn dentistry or medicine. Now, Mr. President, what is the object of requiring one or two courses of instruction in a college? or, as has been suggested, of three courses? It is to instruct the student in the profession of dentistry. If a matriculate comes to the college without substantial knowledge, he cannot acquire a proper dental education in one or two, and hardly in three years; but if he comes already instructed, and knowing what would be taught in the first year, where is the use of putting him through a course of instructions to learn what he knows already? With reference to the multiplication of colleges, I would only say that I take this ground, that a college should be established wherever it is proper and necessary, and not otherwise. We, in Maryland and in the District of Columbia, have concluded that two colleges were too many for that locality, and have consolidated; and, in the consolidation, our faculties have been united. One more point I wish to touch, and that is that the whole tone of the report takes one position, while the resolutions do not express the whole sentiment of the report. The tone of the report claims the right to prescribe what the colleges shall do. I agree that there should be a single association in this country that should have the right to control colleges in their general standing, and in their standard of education, and not have, as we have had, colleges controlling associations; but at this time we have not that right. It is true, in the resolutions the committee recommend the exercise of a legitimate right—that is to prescribe for the qualification of its members. They have the right to do that—to say to one class “you may come in,” and to another class, “you cannot come in.” But they have not the right to say to these colleges “you shall do so and so, and shall not do so and so.” I cannot *vote* for the second and third resolutions. Although conceding the right of this association to take these steps, I think it impolitic and unwise to take this action at this time.

Dr. C. N. PIERCE, of Philadelphia: In referring to the difficulties in the way of adopting any common standard of qualifications, stated that sometime since he attended a meeting of the representatives of forty of the medical schools of this country, called for the special purpose of adopting such a standard. After two days spent in discussing the subject and perfecting resolutions embodying the ideas of the representatives, the vote on their final adoption was taken, and the resolutions were lost, the representative of one of the leading colleges stating that their work could not be binding on the schools, but would be merely advisory. Now, this is an important subject, and any step from the usual order needs to be taken cautiously in order that no retrograde movement will be necessary. I should certainly very highly favor, and shall second any effort of this association which shall have for its object the stimulation of every school in this country to take a step that looks towards a preliminary examination and a standard of intellectual development to which all students must attain before being admitted as regular dental matriculates. But, before our colleges can be induced to adopt this standard of qualification, I apprehend we shall meet with obstacles not less difficult to surmount than those which have retarded a like advance in the medical fraternity.

Dr. C. W. SPALDING: I am aware of the result of the deliberations of the convention to which Dr. Pierce has referred, and also those of another college convention which resulted very similarly. But I hold we are not to be guided in our course by any such example. If the members of the medical fraternity are satisfied to take students who have not the requisite qualifications, let them do it; that is nothing to us. We must mark out our own course and decide what we are to do ourselves. The medical men undoubtedly think the welfare of their colleges would be restricted by such a course of action. That may be the case with us, but what of that? That is not the question we are to consider here. The question is, whether it would be an advantage to the profession, and I think no one can question that. Having acted upon that plan ever since the college I am connected with has been established, I am, of course, satisfied with its workings, and know that it works well. In the meanwhile you may lose now and then an applicant and student, and consequently his fees. You will, however, soon establish for yourself a reputation, and you will have that class of applicants going somewhere else, and not to you. I am in favor of that resolution and hope it will be adopted.

DR. F. H. REHWINKEL: It seems to me we ought not to have any difficulty in coming to an intelligent decision in regard to adopting these resolutions. We have come to a time when we must either do one thing or the other. We must either adopt them in a way that will let the public know that we mean what we say in our announcement, or else the whole thing is mere buncombe on paper. Now, in regard to preliminary examinations, a good deal of opposition, we find, is manifested in regard to the term, common school education, (for such, I take it, is meant by the resolutions). I differ from my friend Dr. Stellwagen in his criticism of the phraseology of those resolutions. I understood it meant a common school education, such as the laws of this country provide for its students. Now, gentlemen, suppose you want to elevate the profession. In order to do that you must elevate the professional education of practicing dentists; and in that way reach the public, and convince the public that here is an educated man. Suppose a dentist is illiterate, and, in conversation with a patient, the patient asks him, for instance, "have you seen such and such a person lately?" and the dentist answers, "No, I have'nt saw him for a week;" what impression would that convey to that patient; and that is not by any means an imaginary case. Now, then, if you want to impress the public with the idea that you send educated men into the world, you must begin with a common school education; and I don't see why a dental college should be debarred the privilege of exacting such an examination, when there is not a high-school in the country that does not demand a preliminary examination; and there is not a college in the land that does not exact a preliminary examination before admission. I don't see why there ought to be a question as to that clause in the resolution. It seems to me that everybody ought to agree to it, and that that point should be made as strong as possible. In regard to granting diplomas regardless of the time and studies to be pursued, there is something can be said on both sides. But bear in mind you are not a board of examiners placed in power by state or any other authority. When you issue a diploma of a college, it conveys a certain distinction with it. It is not simply the abstract title of something, but it conveys the whole material force and worth of that particular college with it, whether it stands high, or whether it stands low. Therefore, if a college confers a diploma I think it ought to insist upon a sufficient time to acquire a thorough knowledge in its own peculiar class of teaching before it is called upon to grant a diploma. And, as colleges are now entitled and privileged to confer

those titles, we certainly ought to require that they insist upon a thorough education in their own establishment. That is a question, however, upon which a good deal may be said on both sides.

I don't believe, however, that a thorough knowledge can be acquired through an examination, unless it is extended over a considerable length of time, and no matter how rigid we may be, colleges and examining boards fall into a system or routine of examining, and this soon leaks out and the students become aware of it and prepare themselves for that kind of examination, and they are passed by the faculty. Allusion has been made to the estimation in which our colleges are held in Europe; and I want to tell you it behooves you to be careful what you do in the matter. The time has come when we should do something to sustain the reputation of our dental colleges in foreign lands. Some months since I had occasion to meet a gentleman in London who was an estimable member of our profession. He had been for many years a practicing dentist in China. He then came home and graduated in a dental college, and then went back to China. He finally came back to London, and when this law was passed to which reference has been made here, he came to the Registrar and made application for registration, at the same time exhibiting his diploma, but they said "that won't do, we don't recognize that at all; there are only two or three colleges in America we recognize: there are no colleges recognized that are not connected with a university." I hold here in my hand the *Monthly Review of Dental Surgery*, published in London, in which is found the advertisement of the "American University Dental College." Philadelphia. Now, gentlemen, you will bear in mind that it is just as well known in Europe as it is here that this is a miserable bogus concern, and yet a well-known medical journal takes these advertisements month after month, while it is known that these diplomas are sold. This same practice was indulged in in Germany, and a great many diplomas from this so-called college were sold there to innocent parties. I have in my possession now two original letters, answers to communications addressed to such an advertiser. They were written by a gentleman in New York, stating to him how a diploma could be obtained. The gentleman goes on to state that he has been in this country a certain length of time, and that he has been in a dental office so long, and that he is willing to send in a paper, and specimens of work and certificates, etc. To this he received the reply: Your wishes are too indefinite—be more particular and I will answer you." In the second letter there was a little more definite statement of what he

wanted, and, in reply to that, learned: "A scholarship will cost you \$60, and a diploma will cost you an additional small sum. I won't mention now, because I would rather not say too much." The gentleman thereupon wrote another letter and said he had communicated his terms to a friend who was also wanting to take a scholarship; as to his certificates he don't want to part with them, and wants to know if a scholarship and diploma can be obtained without the certificates, and he is told, "yes"; send on your \$60 and we will get the diploma. This has been going on for years and years, until it has disgusted everybody in Europe, and especially the German dentists. They say, here is a man who was a barber, or shoemaker, or something of that sort, and now he sticks out his shingle, *American Dentist*. In Germany the term "*Zahnarzt*" cannot be applied, unless the one who uses it has earned it. A practitioner may write "Dentist" after his name, or "American Dentist," but he must not, without proper authority, so use "*Zahnarzt*." That is protected by stringent legal enactments. Now, gentlemen, all this tends to run down the standing and respectability of American Dental Colleges in foreign countries. We all know that legally constituted dental colleges never do grant diplomas *in absentia*, and very few honorable practitioners have received the diploma, *hon. causa*. We have one man in Germany, a graduate of Philadelphia, who has, at the sacrifice of his own interests, and in the face of opposition, stood up for American colleges. He has fought this thing for years, and is fighting it to-day. An agent of this bogus college, and also hired by some parties whose toes are being stepped upon, comes out in a little pamphlet to repudiate the statements that have been made regarding these institutions; and of all the miserable, low, slang pieces I have ever seen, this takes the lead, while trying to refute some statements in regard to the Livingston University, another institution said to exist at Haddonfield, N. J., and which is also in the market with diplomas of M. D. and several other degrees. Our friend Dr. Stockton, of New Jersey, would certainly know something of this institution if it was actually in existence and duly authorized to grant degrees.* What-

* Since the meeting of the Association, Dr. Rehwinkel has received from Dr. Stockton the following reply from the Secretary of the State of New Jersey, concerning the existence and standing of the Livingston University:

"I have no knowledge, official or otherwise, of any such institution.

"HENRY C. KELSEY, Secretary of State.

"Per S. D. H."

ever the party referred to does in the sale of his diplomas, he always attaches the name of the American University Dental College to his announcements. You are well enough acquainted with the transactions of that institution to know that in 1872 its charter was taken away from it. Even to this day diplomas are sold in Germany, whenever it can be done, by that institution; and yet this man comes up and declares that the American University Dental College of Philadelphia is a worthy institution.

Now, in regard to this matter of education, whatever steps we take now I think it behooves us to take a stand which will give us authority to speak upon that subject. And whatever steps you take don't forget to back up that single individual in Europe who is now standing up there for American dentists.

Dr. TAFT moved the division of the resolutions, in order that each proposition might be voted on separately; carried.

On motion of Dr. SHEPARD, after some attempt at amendment, the resolutions as reported by the section were adopted.

Adjourned.

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY,
OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, December 1st, 1879.

EDWIN SAUNDERS, Esq., President, in the Chair.

The Minutes of the previous meeting having been read and confirmed,

Messrs. EDWARD G. BETTS and THOMAS CLEMENTS signed the Obligation Book and were formally admitted to membership by the President.

The President announced that the following candidates had been duly nominated and would be balloted for at a subsequent meeting, viz.:

BAXTER VISECK, 41 Brook Street. Resident.

FRANK ALEXANDER HUET, L.D.S., Ireland, 120 Oxford Street, Manchester. Non-Resident.

MARTIN HENRY, L.D.S., R.C.S.E., 25 Cheriton Place, Folkestone. Non-Resident.

MORTON ALFRED SMALE, M.R.C.S., L.S.A., L.D.S., Eng., 165 Edgware Road, W. Resident.

W. ST. GEORGE ELLIOTT, M.D., D.D.S., U.S., 39 Upper Brook Street. Resident

HERBERT POATE, D.D.S., Pennsylvania, 13A, Promenade, Cheltenham. Non-Resident.

JAMES LEE FRANCIS JOHN PIPE, L.D.S., Eng., 2 Irving Street, Dumfries, N.B. Non-Resident.

W. H. THOMPSON, M.D., D.D.S., U.S., 41 Brook Street. Resident.

The following candidates were then separately ballotted for and elected members of the Society :

GEORGE WILLIAM PARKINSON, M.R.C.S.E., 36 Sackville Street, London. Resident.

FRANCIS EWBANK, M.R.C.S., L.S.A., Harvard College, U.S., 19 Savile Row. Resident.

ADAM TAYLOR, Indian Army, Medical Department, Civil Surgeon, Peshawur, India. Non-Resident.

CHARLES FORAN, Markfield House, Eastbourne, Sussex.

Mr. CANTON related a remarkable case as follows :

Mr. PRESIDENT and GENTLEMEN.—The case I have to bring before this Society is of such rare occurrence that perhaps you will excuse me if I enter rather fully into details.

On the 6th December, 1878, a gentleman called and requested me to attend his wife at his residence, as she had for some time past complained of difficulty in swallowing, produced by artificial teeth. On examining the patient's mouth, I found the tongue raised considerably upwards and backwards by a masss of mucous tissues almost as large as the tongue itself, and giving very much the appearance of a second tongue, that is to say, one under the other, only the lower being shapeless. On examining further I found the patient wearing a complete upper plate of gold and vulcanite with springs; these springs I found attached to a lower gold plate on which was one molar tooth on each side, but I could not see nor could I feel any bar of gold or other material connecting the two teeth. I must mention that owing to this enormous mass of tissues, it was almost impossible to see anything whatever; however, in trying to raise the lower plate I found I could not do so, and, on a still closer examination, I discovered that the whole of the gold bar which

usually rests against the back of the front teeth was entirely buried and grown over by a firm fibrous band of tissues. I asked my patient a few questions, and found she had not had her plates out of her mouth for *five years*, and that the difficulty in swallowing had gradually increased for a long time. I then told her I should be obliged to cut the lower plate out, and left to get the necessary instruments.

The same afternoon I called, accompanied by Mr. Willis to assist me. I first cut both springs through close to the lower swivels, and so removed the upper plate in order to get as much room as possible. Mr. Willis then held one end of the lower plate firmly by the swivel-head with a pair of pliers, while I endeavored to cut through the fibrous bands with a straight bistoury, meaning to cut on the gold bar itself for safety: but this I found I could not do, my knife having a great tendency to slip, and it being very difficult to keep the bulging mass of mucous tissues out of the way. I then took a curved bistoury, and with that succeeded in cutting by degrees through the band, Mr. Willis keeping the plate firmly raised the whole time, and so to say following me up each cut I gave.

The fibrous nature of the band was clear, from the firmness with which the plate was bound down, and also from the peculiar sound produced each time the knife was used. I should say that this band was quite one-eighth of an inch in thickness, and extended from the right molar to the left molar teeth. I remained with my patient some time to see that no hemorrhage occurred, and after prescribing a little carbolic acid and liq. potossæ as a mouth-wash, left.

Everything went on well until the 9th of December (three days after the plate was cut out), when my patient complained of the last lower tooth on each side cutting her tongue and causing pain in swallowing. As these were both mere shells with very rough edges, I removed them, and from that time everything was satisfactory.

On the 18th of December I put in a new upper suction plate of celluloid, but I advised her not to wear any lower piece for a long time, not until all the abnormal growth of tissues had subsided, which I should say would take many months.

I saw this lady's husband about two months ago, and he then said she was perfectly comfortable, but as I have not seen her recently myself I cannot say whether the parts have assumed their normal character or not.

What strikes one as being so marvelous, and which makes these cases so rare, is that anyone can be found who could endure the pain that must

occur. We know how painful even a small ulcer is; but in this case the whole gold bar must have ulcerated right under the tongue and then the two ulcerated surfaces united. Yet I could not get my patient to admit that she had suffered any extraordinary pain.

There is only one other case that I know of similar to this, and that occurred in Mr. Turner's practice; I think Mr. Moon also has seen a case something similar.

Dr. WALKER then related the following case :

A young lady, aged sixteen, came to him complaining of dental irritation and difficulties in mastication. On examining her mouth he found that she had ten temporary teeth in the upper and the same number in the lower jaw, still *in situ*, movable, with large interspaces; only two permanent lower molars erupted. Dr. Walker extracted the loose temporary teeth, and all symptoms of irritation at once subsided; he had since articulated an upper and lower denture. The patient, though well formed in every other respect, had badly developed jaws, which gave a childish expression to the lower part of her face. He was informed that her brother, who was two years her senior, had only two six-year-old molars in the lower jaw, and no permanent teeth in the upper. He thought that the occurrence of two such cases in one family was so rare as to be worthy of record in the Society's Transactions.

The PRESIDENT remarked that though cases in which certain of the permanent teeth were deficient were not very uncommon, cases in which all, or nearly all, were wanting, were so very rare as quite to deserve mention whenever met with.

Mr. VANDERPANT showed a first lower molar with a considerable exostosis on the root which he had removed from the mouth of a gentleman between sixty and seventy years of age; the tooth had been stopped by Mr. Bell forty years ago.

Mr. Vanderpant also exhibited and presented to the museum a curious old bone-plate which had served its late owner for a great many years.

Mr. HUTCHINSON showed for Mr. Farnham, of Ipswich, a curiously-deformed wisdom tooth; growing from the root low down was a supplementary cusp, covered with enamel and resembling a bicuspid or first temporary molar. Several unsuccessful attempts at extraction had been made before the patient applied to Mr. Farnham.

He also showed some useful "chucks" for lathes which had been sent by Mr. Richardson, of Derby. They screwed on to the mandril and were adapted for carrying sand-paper, buff sticks, cane for pumice, and

various other adjustments. The most useful seemed to be the arrangement for corundum wheels ; this ended in a tapered, square mandril on which could be fitted true in a moment any corundum wheel having a brass centre-piece imbedded exactly in the centre.

Mr. Hutchinson then showed in a book which had been kindly lent by Dr. Birdwood, C. S. I., of the India Office, a photograph of a Hindoo bas-relief, representing a group of monkeys engaged in extracting a man's tooth. The unfortunate individual was bound and the tooth was held in the grasp of a very primitive-looking extracting instrument, to which a small elephant was attached by means of tackles. This piece of sculpture was found in a ruined temple near Allahabad, known as the Stupa of Bharhut, and was more than 2,000 years old, the temple having been built about the year 300 B.C.

The PRESIDENT then called upon Professor W. H. Fowler to read his paper.

Notes on the Specimens of Abnormal Dentition in the Museum of the Royal College of Surgeons. By WILLIAM HENRY FLOWER, LL.D., F.R.S., Honorary member of the Odontological Society.

An urgent request from our President, and my desire to signify, in however humble a manner, my appreciation of the efforts made by this Society to promote the scientific consideration of subjects connected with the profession to which most of us belong, have induced me to bring before you this evening some notes upon a subject which has already specially engaged the attention of several of the ablest of our members, on which a very complete treatise has lately been published in France by M. Magitot, and which those who practice dental surgery have most ample opportunities of investigating. Under these circumstances, I fear that I shall not be able to bring much that is new before the Society relating to it. I can only hope to add a few more records of facts to those already accumulated ; the principal interest of which, if there be any, lies in the circumstance that a considerable number of skulls of races of men living in a state of civilization less artificial than our own, and therefore less prone to irregularities, have passed under review. The whole collection consists of about 1100 crania, in examining which for the purpose of drawing up a catalogue, I have noted any marked deviations from the normal condition. I have also added some singular examples from the lower animals where such exceptional conditions are still more rare ; and I trust that the inspection of the speci-

mens which I have brought before the meeting will prove of interest to the members present.

The cases in the human species may be grouped as follows:

A. Irregularities as to the number of the teeth.

a. Excess of the normal number. Of these there are five examples in the collection.

No. 327* is the skull of an adult Englishman, dug up near St. Michael's church, St. Alban's. It has in the upper jaw a pair of supernumerary incisors, placed immediately behind the normal upper incisors. They are full sized, but of rather irregular form, and placed as it were back to back, what should be their labial surfaces being turned outwards. Their roots are immediately behind the central normal incisors, but their apices are directed outwards, so as to be behind those of the lateral incisors. They have been worn at the points nearly as much as the normal teeth.

No. 715 is a male Japanese cranium, with a small supernumerary upper incisor on the right side close to the median line, and behind the normal teeth.

No. 1243, a fine skull of a male West African Negro, with a beautiful and regular set of teeth, but with a small conical supernumerary placed between the right upper lateral incisor and the canine, ranging with the normal series.

No. 636, a male Hindoo, with two upper canines, apparently well developed and of characteristic form, in the dental arch on the right side. This is a condition that Magitot declares never to have been met with, and although there is no doubt about the existence of two teeth in distinct sockets, there are appearances which indicate the possibility of the substitution of a normal canine for a supernumerary which has been lost.

No. 1086, a male Australian, in which on the outer side of the third upper left molar (which is still below the level of the alveolus), was a small supplemental tooth (now lost), in a distinct compartment of the bone.

b. Deficiency in number. Irregularities of this class are not always so easy to determine as those of the last, as cases in which a tooth has appeared and been lost may be mistaken for those in which it is altogether absent from the series.

* The numbers refer to the catalogue of the specimens illustrating the Osteology and Dentition of the Vertebrated Animals, recent and extinct, in the Museum of the Royal College of Surgeons of England, Part 1, Man., 1879.

There is no example of the case, said to be so frequently met with in dental practice, of absence of both upper lateral incisors. The nearest approach to it is No. 1043, an Australian female, in which the upper left lateral incisor is wanting, the canine being in close contact with the median incisor, and the right lateral (now lost) must have been, as shown by the socket, of very small size.

There are four interesting specimens, closely resembling each other, of the presence of only three incisors in the lower jaw, which have spaced themselves quite regularly, the central one being exactly in or very near the middle line. In No. 1111, a Tasmanian, these teeth are remarkably symmetrical, one quite in the middle line of the jaw and with the crown squared at the corners, and flanked on either side by two others which have the outer corners rounded off, as in the ordinary lateral lower incisors. No. 1106, also a Tasmanian, is very similar. In these cases it appears that one of the central incisors has not been developed. In No. 767, a New Zealander, on the other hand, it is clearly the left lateral that is absent; and in No. 1164, a native of Cherry Island, in the West Pacific, the missing tooth appears to be the right lateral. Deficiencies of the last molars have not been counted, as the subject has lately received such a large amount of special treatment.

B. Retention of permanent teeth within the alveolus. This condition, which is usually accompanied by some misdirection of growth, forms one of the most numerous classes of abnormality. An interesting feature in these cases physiologically, is the very frequent persistence throughout life, or at all events to adult age, of the corresponding milk teeth. Indeed it is sometimes only by the presence of such a tooth that the position of the permanent tooth has been detected. Such cases give support to the view advocated by Tomes, that the retention of the milk tooth in its place is a common cause of the retardation of eruption or misdirection of growth in the permanent tooth. They also seem to show that in some cases, at least, the absorption of the root and consequent fall of the milk tooth requires the mechanical pressure of its successor to bring it about. At all events, however difficult it may be to determine which is the cause and which the consequence, there is undoubtedly, as a general rule, a close relationship or interdependence between the fall of the milk-tooth and the eruption of its successor.

Retention in the alveolus happens far more frequently to the canines than to any other teeth; a fact which Magitot attributes to the late development of these teeth, and their not coming into place until those around them are already established in position.

a. Affecting the incisor teeth.

No. 928, a Peruvian adult male. The right lateral upper incisor is retained in the alveolus.

b. Affecting the canine teeth. Of these the Museum contains an interesting series of specimens, formerly belonging to the late Mr. Walter Jones, of Worcester, and described by Mr. James A. Salter, in *Guy's Hospital Reports*, 3rd Series, vol. v. (1859).

No. 283, the left superior canine embedded in the palate, behind the incisor teeth, with its apex close to the incisive foramen.

No. 284, the left upper canine completely concealed in the palate behind the incisors, and the milk-canine permanently retained.

No. 285, a remarkable specimen of the superior maxilla of an old person, with both canines directed almost horizontally inwards and forwards within the alveolar arch, so that their apices meet at the middle line. With the exception of two molars and a premolar on the left side, and one molar on the right, there were no other teeth in the jaw at the time of the person's decease. The crowns of the canines occupy all the space in which the incisors are usually implanted. This closely resembles a specimen figured in Tomes' "Dental Surgery" (1859), p. 187.

No. 286, the right milk-canine permanently retained in its place, its successor lying obliquely in the alveolus, the crown being situated in front of the roots of the two right incisors. Besides these in the general series, are Nos. 279, 280, 281, 282, 317, 505, 515, 517, of upper canines retained in Europeans, No. 620, in a Syrian, and No. 1202 in a native of the Andaman Islands. In No. 515, an Italian female, both permanent upper canines are partially embedded in the palate, and the milk canines occupy their places in the dental arch, although the basilar suture is united, and the third molars are coming into place.

Perhaps in this category should be placed a remarkable case of a skull, No. 278 (said to be that of a Negress), part of the original Hunterian collection, in which the crown of the right upper canine projects upwards, forwards and inwards into the right nostril, its apex reaching as far as the septum nasi.

And also No. 1164, the skull of a native of Cherry Island, in the Western Pacific (the same in which only three incisors are present in the lower jaw), in which the right upper canine is almost completely embedded in the maxilla, the apex of its crown projecting upwards and outwards just below the infra-orbital foramen, with its lingual surface turned forwards.

In both of them, owing to some early alteration of the position of the pulp, the tooth has grown in a direction almost opposite to that which is normal.

There is but one example of the retention of a lower canine,—an Anglo-Saxon, No. 317; but it must be recollected, that lower jaws are not so numerous in the collection as crania.

c. The retention of the premolars appears to be less frequent.

One of Mr. Jones's specimens, No. 287, is a curious example of the lower jaw of an adult, in which the posterior premolars of both sides are permanently retained in the alveolus, and placed obliquely, with the crowns directed forwards against the roots of the teeth in front. There are vacant spaces in the jaws where their crowns ought to be.

In the following cases milk-molars have been retained to adult age, with retention or want of development of the premolar which ought to succeed.

No. 504, An Italian male. Though all the true molars are in place, the second lower left milk-molar is retained and occupies the place of the permanent premolar, which appears not to be developed; at all events an opening made into the alveolar wall shows no trace of its presence in the situation where it might be expected.

No. 515. An Italian female. The basilar suture is united and the wisdom-teeth are coming into place. The posterior lower right milk-molar is retained, but its roots are nearly absorbed, and its successor appears ready to take its place. This is the same specimen previously referred to as having the retarded canines. It has also an inferior incisor with bifurcated root.

No. 714, a male Japanese. Though the basilar suture is closed, and the skull shows every sign of maturity, there are no molars behind the first in either jaw, nor any appearance of their having been lost, and the first upper milk-molar is in place on the right side.

No. 1086, an Australian female. Although that of an adult (the basilar suture being closed, and the right third molar fully in place), both posterior milk-molars are retained, with no appearance of absorption of their roots. The premolars, which should succeed them, are fully-developed, but are concealed and obliquely placed within the alveolus.

C. The cases to be considered next are those of abnormal position of individual teeth, which have attained their full development. The slight cases, which of course are very frequent, will not be noticed.

Of what is called transposition or change of place between two teeth, I have not observed any instance.

In No. 280, an English jaw, the right lateral incisor is placed altogether behind the others and rotated on its axis.

Although in most of the lower races the teeth are regularly placed, among the diminutive Andamanese crowding of the lower incisors is very common, and in two specimens the lower canines are both rotated on their axis so that their labial surfaces face directly inwards, and are in contact with the lateral incisors.

In No. 434, an Italian, the right upper premolars are both misplaced, being side by side and rotated on their axes.

In No. 505, also an Italian, the right upper premolar is displaced inwards and rotated.

In No. 1292, a male Kaffir, the first right upper premolar is completely displaced inwards, the canine and second premolar coming in contact.

Irregularities of position of the true molars appear to be rare, except in the case of the wisdom-teeth, which, however, for the reason assigned above, I need only allude to here, to point out a remarkable exception to the general rule that in the negroid races these teeth are constant in appearance and regular in position and development.

This exception is the very interesting race constituting the aboriginal inhabitants of Tasmania, now extinct, and of which unfortunately very few remains have been preserved. Among the series of sculls of this race in the museum of the College of Surgeons, the largest collection at present existing, the frequency of defective development, shown in a peculiarly corrugated condition of the surface of the crown, irregular position, and tardy eruption of these teeth, is very remarkable. In some of the skulls in the collection the teeth are lost, in others the mandible is absent, so that there only remains thirty-three cases of wisdom-teeth observable in adult crania. Of these eight only are in what may be called a normal condition, though of these two are of small size, and one carious, an exceedingly rare circumstance in the race. In seven the tooth is absent, having been either lost or not developed, all the other teeth being present. Two are in place, but misshaped. In sixteen, errors of position occur, the teeth being either below the level of the alveolus or tilted outwards in the upper jaw or forwards in the lower jaw, being often at the same time of irregular form.

It should be noted that it appears to be the rule in Negroes, Melane-

sians; and Australians, that the third molars are in place *before* the closure of the basilar suture; and that out of a series of nearly sixty Australians so nearly allied in many respects to the Tasmanians, there is not a single case of malposition of the third molars, and only one in which these teeth are abnormally small.

Among the Melanesians of the Eastern Pacific, still nearer in physical character to the Tasmanians, having similar frizzly hair, this deformity is almost equally rare; but there is one instance, No. 1114, from the Isle of Pines, of the crowns of the posterior upper molars being turned directly outwards.

Defective condition of the wisdom-teeth is therefore no monopoly of the most highly-civilized races, but may also be found among the most abject and degraded of the whole human species.

In some of the Mongolian races, notably the Eskimo, the wisdom-teeth are frequently wanting.

Specimens among other Animals.

One of the commonest causes of anomaly in the dentition of animals arises from the over-growth of such teeth as have persistent pulps, when the natural wear at the extremity which keeps them in proper form is interfered with. Of this there are numerous instances in the museum, especially among Rodents, and also one in the Rodent-toothed Lemur, *Chiromys*, and a very remarkable case in the lower jaw of a boar, which was figured by the great anatomist Chiselden, in his "Osteographia," published in 1733, and is thus described in Prof Owen's Catalogue: "It shows the effect of the unchecked growth of the lower canines through some defect of the upper ones. The points of both the lower canines following the curve impressed upon them by the shape of the socket, have re-entered the mouth, piercing the integument and the substance of the jaw itself, the apex of the right tusk projecting forwards on the inner side of the base of the same tusk, whilst the apex of the left tusk presses against the more advanced extremity of the right tusk, where it is buried in the substance of the bone."

These specimens can scarcely be considered as teratological or abnormal, in the sense in which we have previously used the word, but rather cases of natural growth, modified or perverted by abnormal conditions.

The anomalies of number or position are far more rare.

Of examples of excess above the usual number, I can only adduce

one, in a common seal (*Phoca vitulina*), No. 3963 G, which has a small molar in addition to the usual number of five, behind the last on the left side of the upper jaw, and another one on the inner side of the fifth in the lower jaw, also on the left side, and being quite a miniature representation of the ordinary molar teeth.

Abnormal position is illustrated in a fine adult male Orang (*Simia satyrus*), No. 5053 B, with the upper left canine placed too far back, and in contact with the second premolar, displacing the first premolar inwards. When the jaws are closed, the upper canine shuts behind the first lower premolar.

No. 5017 A, is a Vervet Monkey (*Cercopithecus lalandii*), with the lower canines both directed so far backwards that instead of shutting in front of the upper, they lie within, and are altogether concealed by them. Their apices fit into cavities formed in the alveolar border, at the inner and posterior edge of the upper canines. The defect is quite symmetrical, and all the other teeth are in normal opposition.

A curious instance of abnormal position of teeth induced by selective breeding, and perpetuating itself by heredity, is seen in the case of the bull-dog, in which as the teeth have not diminished in size or number to accommodate themselves to the diminished length of the upper jaw, one or more of the upper premolars, instead of being placed with its long axis in the antero-posterior direction, as in all other dogs, is placed obliquely, or often quite transversely in the jaw.

Lastly, I would direct the attention of the members of the Society to some singular anomalies occurring in the tusks of the elephant. The first (No. 399, Teratological Series), that of a double trunk, is truly teratological, and must arise in a bifid condition of the pulp. It cannot be a union of two teeth, however much it may look like it ; nor can this, or in fact any other, of the anomalies of which I have spoken, be explained on the principle of reversion to an ancestral type. It is simply a case of monstrosity, the origin of which is at present perfectly obscure.

The next set of cases, that of spirally-grown tusks, of which there are three examples in the museum, appear to be of pathological origin, although the result is a very singular one. In all of them there is a defect of growth of ivory on the inner side of the spiral curve, apparently owing to an imperfect condition, either from disease or injury, of the pulp, limited to one spot, and persisting during the whole growth of the tusk. The growth being retarded at this spot, and more rapid elsewhere, has resulted in the spiral form.

No. 2757 This specimen is perhaps the oldest dental or osteological specimen preserved in any museum in the country the history of which can be traced. Two hundred years ago it formed part of the collection belonging to the Royal Society. When this was broken up it found its way to the British Museum ; and again, in the early part of the present century, it was transferred, with other osteological specimens, to the College of Surgeons. It is figured and described in Grew's "Museum Regalis Societatis," 1681, p. 31, as "a spiral or wreathed tusk of an elephant. Presented from the Royal African Company, by Thomas Crispe, Esq. It is twisted or wreathed from the bottom to the top, with three circumvolutions standing between two straight lines. 'Tis also furrow'd by the length. Yet the furrows surround it not, as in the horn of the Sea Unicorn ; but run parallel therewith. Neither is it round, as the said horn, but somewhat flat. The top is very blunt." Fig. tab. 4.

The second specimen of the same kind, No. 2756, also from the British Museum collection, is of smaller size, and more open spiral curve ; and the third, No. 2757 A, recently received from the Gaboon, is interesting as showing, that as the disease which produced the defective growth increased in intensity, the curvature became greater, until when half the side of the tusk was affected the tooth was growing in a circle instead of a spiral, then the growth was altogether arrested, and the tusk probably dropped out of the socket.

DISCUSSION. ▶

The PRESIDENT said that after the paper they had heard he felt sure that the members would be as much obliged to him for his temerity in calling upon Professor Flower, as they were to that gentleman for having found time amongst his numerous engagements to comply with such a request. He thanked Professor Flower in the name of the Society for the honor he had conferred upon it. With regard to the subject in hand, his experience was that irregularities of excess were more common than those of deficiency. He knew one gentleman who had five incisors in the upper jaw, all well-formed and regular, so that there was no obvious deformity. Another had only two incisors in the lower jaw, but these were unusually large.

MR. CHAS. TOMES said he need not refer to the numerous specimens of abnormal dentition contained in their own museum, since those who cared to do so could examine them for themselves whenever they chose. He had seen some very curious examples also in other museums ; one

of the most remarkable was at Boston, a case of malposition of one of the upper canines. It was found lying in the nasal process of the superior maxilla, its crown being close to the lacrymal duct. Professor Flower had spoken of the peculiar jaw of the bull-dog as being an accidental deformity which had been carefully intensified and rendered permanent by breeding. He had in his own family a dog which had exactly the opposite deformity; its upper incisors and canines were far in advance of the lower; yet its three or four immediate ancestors presented no peculiarity of the jaws. It was a good example of an accidental deformity suddenly appearing, and no doubt it might be rendered permanent were it worth while to do so. With regard to the stunted wisdom-teeth of the Tasmanians; since in their case this could not be a mark of civilization, it might be due to another cause, viz., premature arrest of the growth of the jaws. Stunted teeth were frequently associated with deficiency of room. Any cause which cut short the backward elongation of the jaw would tend to produce also imperfectly developed wisdom-teeth. This result did not always follow, but it did usually, and possibly the explanation of this curious exception to the general rule, that defective wisdom-teeth were associated with high civilization, might be found if looked for in this direction.

Dr. WALKER quoted Professor Flower's statement that "suppression of the canine teeth was more common than suppression of the incisors," in the maxillary bones of the inhabitants of England, so far as his experience guided him. As an exception to this rule he would give the history of a case that occurred in his practice: A gentleman between fifty and sixty erupted his two central incisors after he had attained fifty. For many years he had worn, with every appearance of comfort, an upper and lower denture with perfect masticating power; in the eruption of each central the dentures became so misplaced that he was obliged to seek assistance in extraction; the central teeth were found to be perfect in formation, although slightly more horn-like in color, and comfort in the wear of the dentures was again established. The suppressed eruption of one or both of the canine teeth he had seen several cases of in practice, some more worthy of notice as to position than others. In one case the left canine had assumed a position the entire length of the palatine arch, the crown only covered by mucous membrane lying behind the lateral incisor.

Mr. COLEMAN said he knew it was the general opinion that the wisdom

teeth were becoming obsolete. There was no doubt that they were often imperfectly developed, especially those in the upper jaw, but he thought that many of the cases in which these teeth were said to be absent were really cases in which the first molar had been removed at an early age. The patient looking upon this as a temporary tooth, mistook the wisdom-tooth for his second permanent molar, and thought that the third molar had failed to appear. But on looking into the patient's mouth a slight irregularity in the dental arch might generally be seen between what appeared to be the first molar and the second bicuspid; and on more careful inspection it would be seen that the first molar had been removed.

Mr. HENRY related an interesting case of a canine first showing itself at ninety years of age. The old lady was wearing a denture at the time. He asked Professor Flower if he knew of any means of ascertaining, when teeth are thus *apparently* absent, whether they were only unerupted or were really missing.

Mr. VASEY said he agreed with Mr. Coleman that in many cases in which the wisdom-teeth were thought to be absent, the first molars had been removed at an early age and then the third molars were mistaken for the second. This mistake was the more likely, since under these circumstances the third molars were generally better developed than usual, and made their appearance earlier—they might come through at fifteen or sixteen years of age. The tooth might then be readily taken for a retarded twelve-year-old molar instead of an accelerated wisdom-tooth.

Mr. DENANT said an instructive case had occurred in his practice a few years back. A lady came to him and begged him to extract her left lower first molar; she said she had suffered from neuralgia for months, and could bear it no longer. The tooth had been soundly stopped with gold, there was no tenderness on percussion, or excessive sensitiveness of any sort, and on inquiring more carefully about the neuralgia he found that the patient had great pain during deglutition. The lady was twenty-eight years of age, and the left lower wisdom tooth had not appeared. Mr. Denant advised that the first molar should not be interfered with, but that the second, a perfectly sound tooth, should be extracted. This was done, and the patient had no return of the pain.

Mr. HUTCHINSON said Professor Flower had remarked that in savage races, as in civilized ones, when a permanent tooth was retained in the alveolus, the corresponding temporary tooth generally persisted. Did he think that this persistence of the temporary tooth was the *cause* of the

non-appearance of its successor or only the result of it? The answer to this question was of great importance as a guide to treatment. For instance, in the case of a patient aged twenty-five, with unerupted permanent and persistent temporary canines, would it be best to extract the temporary teeth or to leave them?

Mr. MUMMERY said he knew of a clergyman who had an extra incisor in the lower jaw; it was quite central and regular in appearance. Some years ago he had an opportunity of examining the jaws of a large number of African negroes. He met with five individuals—Ashantees—who had a fourth molar in the upper jaw; in two cases the extra tooth was present on both sides, in the other three on one side only. He did not meet with a single instance of a fourth molar in the lower jaw. With regard to the connection between imperfect development of the wisdom-teeth and a high degree of intellectual culture, he had examined a large number of persons belonging to the agricultural classes, and found that in them the molar was generally far better developed than in the more highly-educated classes of the community. He thought that the form which should go to promote the growth of these teeth was diverted to the brain. Whatever might be the rule in other barbarous nations he knew that in Africans these teeth were never missing, and were generally highly developed.

Professor FLOWER said he considered himself fortunate in having on this occasion selected a subject which had been received by the members present with something more than mere passive interest. Much had been said during the discussion about the wisdom-teeth, but this was really too large a question to enter upon then; he could only again refer them to the paper by Professor Mantegazza. He was sorry he could not give a satisfactory answer to the questions of Mr. Henry and Mr. Hutchinson; it was a fact that in the majority of cases, when the temporary tooth persisted beyond its usual time, the corresponding permanent tooth would be found buried in the jaw beneath it, but this was not invariably the case; and whether the temporary tooth had been retained because the permanent tooth had not come forward to push it out, or whether the retention of the temporary was for some reason or other the cause of the permanent tooth not coming up in its place, was more than he should like to decide. He believed that Mr. Tomes was inclined to support the latter view, and he should place great reliance on his judgment. With regard to Mr. Tomes' dog, he had heard that a similar deformity was not uncommon amongst foxes in Warwickshire,

and specimens of it had been sent to him. There was no doubt of the fact mentioned by Mr. Tomes that imperfect development of the wisdom-teeth was frequently associated with want of space due to arrest of the growth of the jaw.

On the motion of the President a hearty vote of thanks was given to Professor Flower for his valuable paper ; to Dr. Birdwood for the loan of General Cunningham's work ; and to Mr. F. Canton, Dr. Walker, &c., for their contributions.

The PRESIDENT then nominated Messrs. Thos. Hardy and Gibbings to act as auditors of the accounts for the year, and the meeting terminated.

On December 1, the Council received applications for membership from :—

WM. ADOLPHUS MAGGS, L.D.S., R.C.S., 12 Albert Street, Regent's Park. Resident.

ARTHUR TAYLOR, L.D.S., 17 Belle Vue Terrace, Belle Vue Road, Leeds. Non-Resident.

GEORGE PEDLEY, 30 High Street, Borough. Resident.

CHARLES FARNSWORTH, 96 Oxford Street—C. on M., Manchester. Non-Resident.

FREDERICK JOSEPH BENNETT, 17 George Street, Hanover Square, W., M.R.C.S., and L.D.S., R.C.S. Resident.

CORRECTION.

In the November No. of the *Miscellany*, in the report of the First District Dental Society, it is stated that "at the last meeting of the Odontological Society, the President spoke of some broaches manufactured by *Johnston Bros.*" This was an unfortunate mistake. The stenographer reported, "broaches manufactured by *Mr. Johnson*," and the proof-reader, knowing of no other Johnson manufacturing broaches, altered the report by taking out "Mr. Johnson" and putting in "Johnston Bros." It turns out to be a mistake, and that the broaches spoken of were made by a Mr. O. Johanson, of Nassau Street, New York. We very much regret the mistake, although it was a natural one for the proof-reader to make.

JOHNSTON BROS.

NEW BOOKS.

"THE PRACTITIONER."

AN

INDEPENDENT MONTHLY JOURNAL,
DEVOTED TO

Medical, Surgical, Obstetrical and Dental Science.

Edited by HARVEY L. BYRD, A.M., M.D., and BASIL M. WILKERSON,
D.D.S., M.D.*Altera poscit opem res, et conjurat amice.*

We welcome to the ranks of scientific literature this journal, published in Baltimore, by our friends, whose names appear above. Certainly no neater journal, in the matter of paper or press-work, has gone to the profession. Its articles, too, are largely original, and are solid and instructive as well as entertaining. It aims to be of use both to the medical and dental profession, which indeed it considers as a unit. We shall look for its appearance each month with interest, and shall doubtless find something in it which will be of service to our own readers. Its subscription is \$2.00 per annum, and the address of its publisher is 68 South Charles Street, Baltimore, Md.--ED.

THE RELATIONS OF RAILROADS TO THE PUBLIC.

A Statement prepared by F. B. THURBER, of New York City, in reply to inquiries submitted to him by the Chief of the Bureau of Statistics, Washington, D. C.

The public examination of the freight rates of the railroads in the State of New York, that has been carried on during the last few months, can but be productive of excellent results. No doubt something could be said by the railroads in justification of their course, but with all the good they have done they have so often injured, or almost fatally crushed industries dependent upon them, that the existing state of things has become almost unbearable. We personally have known an instance where property of a resident on the line of a western road was prohibited a market by the action of the road, and, on remonstrance, one of the officers of the road said they did not wish to sell his goods; they would, after a time, need to use them themselves. The pamphlet, the title

of which heads these remarks, is by one of New York City's most energetic business men, and is a clear exposition of the inequalities and infelicities of the present railroad system. We think the pamphlet can be obtained by addressing Mr. F. B. Thurber, Grocer, New York City.—ED.

DR. W. ST. GEORGE ELLIOTT, IN REPLY TO DR. J.
ADAMS BISHOP.

Editors Johnston's Dental Miscellany.

MESSRS:—Would you kindly allow me to correct some misstatements that appeared in a paper read by Dr. Bishop before the First District Dental Society, and which is published in your journal for November?

The essayist takes up and criticises a paper read by the undersigned before the New York State Dental Society, and by his misapprehension of facts he is led into unjust inferences.

As stated in the paper alluded to, I was consulted by the late Hon. W. H. Seward, in 1870, while at Yokohama, Japan. While rendering some dental service, I incidentally noticed that there was a false joint in the right side of the inferior maxilla. In speaking of the matter to Mr. Seward, he said there was no union of the bone at that side and that it was comparatively useless.

From what I now know of the case I infer he meant to say, that while the left side had united and was useful, the right had not, and consequently his lower jaw was *comparatively* useless.

When the paper was published, after having been rewritten, in the *New York Medical Journal* for March, 1879, Dr. Gunning threatened the Messrs. Appletons with a suit for some \$20,000 damages unless I immediately retracted my statement, which I of course refused to do. During last March I left New York and came to London to take charge of a practice, and I have heard nothing further until your journal came to hand.

Permit me to remark in closing that Dr. Bishop's statement in regard to the fracture is doubtless correct, as he merely verifies my statement, which was that the inferior maxilla was comparatively useless for masticating purposes, there being a false joint at the seat of the original fracture. No union having taken place, Dr. Bishop knows that fibrous union between the fractured ends of a bone produces a false joint, and that such a jaw must, in the very nature of things, be *comparatively* useless.

I regret, however, that I did not know of the fracture on the left side, or I certainly would have given due credit to Dr. Gunning, as I did in the case of Private Burgan, so unkindly alluded to by Dr. Bishop. I could have had no object in misrepresenting the matter, as I have not the honor of being personally acquainted with Dr. Gunning, and for Dr. Bishop I have always had the highest regard.

Very respectfully,

W. ST. GEORGE ELLIOTT, M.D., D.D.S.

39 Upper Brook Street, London, W

OBITUARY.

SAMUEL STOCKTON WHITE, D. D. S.

A private cable despatch announces the death in Paris, the 30th of December, of Samuel Stockton White, D.D.S., the well-known manufacturer of dental goods. Dr. White was born at Hulmeville, Berks county, Pa., in 1822, the son of William R. and Mary (Stockton) White, of that place. His father died when he was 8 years old, and his mother and family soon after removed to Burlington, N. J. At the age of 14 Samuel was indentured to his uncle, S Wesley Stockton, on Vine street, Philadelphia, to learn the practice of dentistry and the art of manufacturing artificial teeth. Mr. Wesley Stockton was one of the pioneers in this art, if not the very first dental manufacturer in the United States. On attaining his majority Mr. White commenced the practice of dentistry in his uncle's office, also superintending Mr. Wesley Stockton's manufacturing business. He afterward removed to Race street, above Eighth, where he practiced alone until 1845. He then took in Ashabel Jones, of New York, and John R. McCurdy, of Philadelphia, as partners. In 1846, finding it was necessary to devote his whole time to the manufacture of artificial teeth, he relinquished office duties entirely. It was the constant aim of the firm of Jones, White & McCurdy to produce the artificial to correspond as nearly as possible to the natural teeth, and the scientific part of the business was entirely dependent on Mr. White. The firm continued in Race street until 1848, when it purchased a property on Arch street, below Sixth, which was fitted up as a factory and salesroom. The firm soon became the leading concern in this growing and important manufacture in the

country. Branch houses were established in Boston, New York and Chicago, and the fame of the improved dental goods became worldwide. In 1859 Mr. White purchased the interest of Mr. McCurdy for \$140,000, and in 1861 bought out Mr. Jones on the same terms. In October, 1867, he removed to the southeast corner of Chestnut and Twelfth streets, where, having erected a magnificent marble-fronted structure, furnished with every convenience, he continued his famous manufactures on an extended scale. These manufactures were not confined to artificial teeth, but included every imaginable article and appliance for dentists' use. The quality of these goods is evidenced by his having been the recipient of over fifty first premiums (many of them gold medals), from various institutions, associations, etc., including one from each of the world's fairs, commencing with the London Exposition of 1851; the diploma of honor was accorded him at Vienna, in 1873. Dr. White was a member of the Methodist Church, and in politics was an earnest Republican. He was married in 1845 to Sarah J. Carey, of Wilmington, Del. The cause of his death was congestion of the brain. He was accompanied to Europe by a son and daughter, and by his nephew, an eminent physician of Philadelphia. The body is expected to arrive in this country to-day.

NOTES.

Der Zahnbrecher.—No. 2.

Our frontispiece of this issue is an excellent reproduction of a dental picture (entirely different from one of the same name that we published some months since). For the original we are indebted to the kindness of Dr. J. H. Meyer, No. 20, W. 32d Street, New York.

Massachusetts Dental Society.

The Annual Meeting of the Massachusetts Dental Society was held December 11th and 12th, at 15 Pemberton Square, Boston. The President, Dr. L. D. Shepard, in the chair.

The regular order of business took place, after which, Dr. C. G. Davis, of

New Bedford, delivered the Annual Address. Subject: "Hash of Cold Pieces with a New Dressing."

ESSAYISTS.—Dr. J. H. Kidder, Lowell.—Subject: "Crystal Gold, and some Methods of Using it."

Dr. D. M. Clapp, Boston.—Subject: "Short Notes."

The following resolutions were unanimously adopted:

WHEREAS, Serious charges against Dr. George F. Waters, a member of the Massachusetts Dental Society, in connection with the death of Mr. George A. Gardiner, of Brooklyn, have been published in the papers of the country.

Resolved.—That from the published reports and our own investigation, the Massachusetts Dental Society consider Dr.

Waters entirely innocent of any unprofessional or injudicious conduct in this case, and that his treatment was wise, cautious and safe.

Resolved.—That the charge that Dr. Waters used arsenic in this case is entirely and wholly false. In such a case no man possessing the rudiments of a dental education would use arsenic.

Resolved.—That the course of the *New York Times* in first publishing this sensational report, without taking proper means to investigate the charges, is an outrage upon truth and the rights of citizens, and that its subsequent conduct in not making correction and reparation, as far as possible, was not fair and honorable, and as this charge has seriously effected the business of Dr. Waters, by unjustly undermining the public confidence in him, we consider that that paper is pecuniarily liable for damages.

Resolved.—That we know Dr. Waters to be one of the best informed and most intelligent investigators in the profession, and entirely worthy the fullest confidence of the community. Unanimously passed, Dec. 12th, 1879.

L. D. SHEPARD, *President.*

DWIGHT M. CLAPP, *Secretary.*

The following officers were elected for 1880:

President, Dr. C. G. Davis, New Bedford; Vice-Presidents, Dr. George F. Waters and Dr. C. H. Osgood, Boston; Recording and Corresponding Secretary, Dr. W. C. Page, Charlestown, Boston; Treasurer, Dr. E. Page, Charlestown, Boston; Librarian, Dr. F. M. Robinson, Boston; Microscopist, Dr. R. R. Andrews, Cambridge; Orator, Dr. A. M. Dudley, Salem.

EXECUTIVE COMMITTEE.—Dr. D. M. Clapp, Boston; Dr. R. R. Andrews, Cambridge; Dr. H. C. Meriam, Salem; Dr. Charles Wilson, Boston; Dr. D. G. Harrington, Boston.

W. C. PAGE, D.M.D., *Sec'y.*

American Academy of Dental Science.

The American Academy of Dental Science at the Monthly Meeting, held in

Boston, December 3d, 1879, adopted the following resolutions:

It having pleased an all wise Providence to call from the scene of his earthly labors and usefulness, our esteemed fellow member, JOHN CLOUGH, M.D., of Woburn, Mass., therefore,

Resolved, That the American Academy of Dental Science has heard with deep regret of the decease of our worthy friend and associate, Dr. John Clough, who, as one of the old practitioners of dentistry in Boston, for more than thirty years, faithfully upheld the honor of the profession.

Resolved, That in the death of Dr. Clough, the Academy has sustained the loss of one of its most zealous members, dental science an earnest and intelligent advocate, and the community an excellent and useful citizen.

Resolved, That we accord to his memory this heartfelt tribute of respect and tender to his surviving family our condolence and sympathy in their heavy bereavement.

Resolved, That a copy of these resolutions, signed by the President, Vice-President and Secretary, be presented to the family of the deceased and a copy be entered upon the records of the Academy and published in the Dental Journals.

CECIL P. WILSON,
Cor. Sec'y.

A DENTIST'S ACCOUNT.—Mr. Wallace, Dentist, Glasgow, sued a merchant in Falkirk, for £17 for supplying to his wife a set of teeth and extracting twenty-three stumps of teeth with the use of nitrous oxide. The charge for extracting the teeth alone was 7s. 6d. each. The Sheriff has allowed the pursuer £10 10s., allowing £2 2s. for the extraction of the stumps, which he considered ample for an operation which occupied only about half an hour.

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*February, 1880.*—No. 74.

OUR SOCIETY.—HOW CAN ITS USEFULNESS BE INCREASED?

BY DR. G. A. MILLS.

Read before the Brooklyn Dental Society, at the November meeting, 1879.

This is certainly a very important subject for our consideration, and although it is our purpose to consider it from a local standpoint (quite naturally), yet it has a decided connection with our professional relations in general. All will concede that the objects of this Society in its inception were mutual interests and benefits, cultivation of larger social relations, and an aggregation to the body proper of a greater degree of general knowledge. Certainly, no one familiar with its history, can fail to perceive the fact that it has in no small sense been successful in the acquirement of these, and it would be unfortunate if it should, at any time, allow itself to be deterred from these objects of growth and vitality.

So much for our Society. How its usefulness can be increased is a question of vital importance to every member of the organization. No one is so lacking in mental or mechanical fertility that he cannot contribute something of interest, and what I have to say will be upon the subject of each member becoming an individualized reservoir of accumulative thought and action. It is true, as Dr. Farrar said in his excellent and suggestive paper read at our last meeting, "that there are varied degrees of ability among men." Now let each apply the ability they may have, for I hold that an unwillingness to do this is not justice to our patients, ourselves, our profession, or our Society. Let each one select a department to his taste and make zealous application in con-

tinued efforts and take notes of his acquisitions by models, records, memoranda, specimens, drawings and etchings, and as they accumulate present them to this body—by this method aiming to become something of an authority in the line in which he may be working. To be sure the light of discussion may sometimes disarrange *his* arrangement but at the same time it may, and most likely will prove profitable: for criticism or opposite opinions need not necessarily deter one from a faithful and honest pursuit of knowledge, neither should it be taken as an evidence of disapproval. To be easily discouraged by criticism, or by a seeming or real opposition, does not give evidence of true metal.

There are very important reasons why the younger members should adopt these recommendations, for I predict that the time is not far distant when there will be an increased demand for specialized practice, viz., in the departments of oral surgery, regulating the teeth, manufacturing of artificial fixtures for the mouth, special operations in operative dentistry, etc., etc. It is very apparent that this must be so, for so few are able to become generalists in anything like a large degree. This is already so among physicians. They are adopting special lines of practice, such as the eyes, ears, lungs, throat, nervous diseases, etc. It is a *sad aspect* to see so many in our ranks that give evidence of *aimlessness* in their calling, and the interests of this as well as all Societies demand more united energy to raise a high standard of ability, in order that *reality* may displace pretension; and in proportion as we are able to accomplish this object Societies will prosper, take on more vigorous growth, and become a power for good. So we must exercise charity and hope better things for the future. Never were there such opportunities as now to acquire demonstrated knowledge, and none can afford to neglect them if they expect to stand side by side with those who do improve them. This fact we cannot disguise: the public are becoming more discriminating; so that none need be surprised in finding themselves outstripped, if they neglect these educational advantages.

In conclusion I would say, make the meetings of our Society so decidedly interesting that none can afford to be absent; have always a worthy object in coming; have a choice pride regarding it; speak well of it, and make attendance upon its sessions secondary only to a more important duty. I congratulate the Society that we have once more a vital object of attraction, and one of real profit to every one that will attend to it; and let me say just here that attention to the public clinic we have now established for each month will do much to increase the interest of

our meetings, and especially so because the clinic occurs on the afternoon previous to our evening gathering. Regular attendance at the clinic and what we see and hear there will so enthuse us that we will come together in the evening with a freshness that will add much fervor to our proceedings. I believe, as I have for many years, that the public clinic is a powerful institution for good. The one in New York city is a striking example, and none can compute all the benefits that have accrued from it. We can make our Society what we will, and the first requisite necessary is "Good will toward all, and malice toward none."

19TH ANNUAL SESSION
OF THE
AMERICAN DENTAL ASSOCIATION,
HELD AT NIAGARA FALLS, AUG. 5TH, 6TH, 7TH AND 8TH, 1879.
2nd DAY—EVENING SESSION.

REPORT OF SECTIONS.

The Association was called to order at the usual hour. President McKELLOPS in the Chair.

On motion the Second Section was passed, and the Third Section, Dental Literature and Nomenclature was taken up.

SECTION III.

Dr. TAFT read the report on "Dental Literature." The literature of the world is one of its most important instrumentalities. No important branch of human education can afford to ignore this statement. The arts, science, professions and trades, and even occupations of the more menial sort have each their appropriate literature, on which they largely depend for development, growth and strength. It is made to serve a great variety of purposes, too often the objectionable and pernicious as well as the good. Literature is a written record of acts, words, thoughts, and opinions of those who have pursued its paths. Dentistry had not a name or place among the professions or in the world, until its literature began to be developed. It is impossible to estimate with any precision the influ-

ence of its literature on our profession, from the beginning to the present; that it has been great no one will venture to question. Indeed, the present status of dentistry is in a great measure due to it. During the seventeenth century but little was written upon the subject of dentistry—only a few crude efforts were made—indeed, nothing that looked towards or indicated the establishment of a profession, or even a special occupation. But during the eighteenth century the importance and value of the teeth began to be more fully realized, and this century was characterized by a spirit of inquiry, investigation and discovery that hitherto had been unknown. Of twenty works written prior to the year 1800, eight were produced in Great Britain, nearly all in London; and eleven in France, generally in Paris; and one in Vienna. Prior to the present century nothing of any note was written in this country upon the teeth or pertaining to them.

During the first forty years of this period works multiplied rapidly. Most of these were written and published in London and Paris, while D. D. Fitch, Solyman Brown, H. H. Hayden and C. A. Harris engaged in the work on this side. The influences and results of the growing literature of our profession during this period are worthy of consideration. The first mention of the existence of an organized effort by an American Association of dentists, is made in the first volume of the *American Journal of Medical Science*, in 1839. During the year 1840, the American Association of Dental Surgeons was organized, and was an agent of great good for about fifteen years. Subsequently other societies were formed. The number continued to increase until now there are in active operation in this country about one hundred dental associations, national, State and local. The good accomplished for the profession by these organizations is beyond estimation.

In 1839, the first periodical devoted to dentistry, art and science, was established, under the name of the *American Journal of Dental Science*, and has exerted an immense influence in moulding the thought of the profession. Since the beginning of our literature quite a number of other periodicals of less note have appeared from time to time. Some of these are still in existence and accomplishing good.

In 1839 the Baltimore College of Dental Surgery was organized, and in 1840 its first session was held. In the succeeding years other colleges were founded, and at the present time there are in this country fourteen in active operation. The very existence of the three grand agencies just enumerated is based upon and sustained by our literature; without it

how feeble an agency would our associations be? What would have been the success of our colleges without a textual literature? That the written productions have been free from error and palpable defects, none will venture to claim. Indeed, it may be said that they all bear the stamp of imperfection. But let not a severe judgment be passed until due consideration is given to the rapid development, change and growth which have in a marked degree characterized the dental profession throughout its history, and thus caused constant change in what was said and written about it. So great and rapid have been these changes that the doctrines and instructions which were at one time valuable have, within a few months, or years at least, become obsolete. Our literature of the past should be valued for the good it has accomplished. Again, in the early years of the profession far less importance was attached to the writings of our profession than is the case to-day. A retrospective view must carry the conviction that our literature has been one of the chief elements in the growth and one of the most important aids in sustaining the profession. If these things are true we should value the literature of our profession. That it should be improved all will admit. Far more care should be exercised in this direction in the future than has been in the past. Especially is this true of the tone of the periodical matter. It may with truth be said that our periodicals compare favorably with the publications issued by the medical profession.

The past year has added something to our textual writings. We will first notice Dr. Adolph Witzel's "Die Antiseptische Behandlung der Pulpakrankheiten des Zahnes; mit Beitraegen zur Lehre von den Neubildungen in der Pulpa."

The author starts out by vindicating the use of arsenic in the treatment of inflamed pulps. Some of his views are somewhat at variance with our observations. For instance, he says arsenic applied to a healthy pulp that has not been wounded acts superficially, and when applied on a diseased pulp acts only on the diseased part. He maintains that there is no change in the portions that do not come in direct contact with the arsenic. Any changes outside of this contact are due to the progressing pulp inflammation. In cases where the results are not such as he has given, it is because of failure in proper application of the agent, or the treatment has been defective at some point. He suggests the addition of a small portion of morphine to the arsenic. All the diagnosis for irritated pulp is made by a jet of cold water upon the dentine nearest the pulp, which will cause pain but a moment when the pulp is but

slightly irritated, but will give pain for a longer period when the organ is partially diseased. The report criticised other views of the author, but as a whole the book was commended. Dr. Witzel has certainly given close attention and much study to the work, and it is very desirable that it should be rendered into English at an early date.

Hunter's "Mechanical Dentistry" is a practical treatise on the various kinds of artificial dentures, etc., by Mr. Charles Hunter, of London. This contains 260 pages, and is well illustrated; is an excellent preliminary work for the student, and a good book for the practitioner as well. Some of the methods and principles introduced and described are new to this country. From this, however, let it not be presumed they are not valuable. There is very little in this work that is not valuable, and it should be in the hands of every one engaged or interested in dental operations.

Since the last meeting of this body, the second edition of the "Dental Materia Medica and Therapeutics," by James Stockten, has made its appearance, with a considerable amount of fresh matter, and the volume as now published is double the size of its predecessor. The advance of the profession will, doubtless, ere long render necessary a more complete special work than this, and in the preparation of the next edition of this work it will be well for the author to bear in mind that *materia medica* already forms a part of the curriculum of the dental student.

We would also refer to the "Manual of Dental Surgery," edited by Robert Baume, a dentist of Berlin. In this work the author takes issue with Dr. Witzel on the use of arsenic in the treatment of diseased and exposed pulps. In the destroying of the diseased part of the pulp, and the preservation of the remaining portion he seems to have very little faith. The question will naturally occur, however, if this treatment is practicable and successful at the hands of Mr. Witzel, may it not be with others? If he has clearly obtained the results he claims, it teaches an important lesson, the value of which ought not to be disregarded. Diseases and treatment of the periosteum are fully considered, and the author's views generally are correct. On the whole the work is a valuable one.

We would refer to a work on the "Origin and Formation of the Dental Follicle," by Legros and Magitot. Our attention was called to this work last year. At that time it was only in the French language; it has since been translated into the English by Dr. M. S. Dean. This is the best work that has ever been written upon this subject. In addition to

this work the translator has added an introduction of forty-five pages, on the "Mucous Membrane." This is quite as interesting and important a part of the work as the translation. In the preparation of the work the author has taken a new departure, at least so far as the form of dental literature is concerned. It is placed in the form of a decalogue between the teacher and pupil. The work will within a few days be obtainable by all, and it is better that I should permit you to be surprised and delighted by a personal examination than that more should be said here.

In the future let the literature of our profession give evidence of development, growth and progress equal to that which is so palpable in almost every other agency that goes to make up our profession.

Dr. C. F. W. BÖDEKER, New York: I have a few words to say about Dr. Witzel's work. I have read it very carefully, and I think he has made a good many mistakes. With regard to his remarks concerning the use of arsenic, I do not at all agree with him. He says that the action of the arsenic is altogether superficial in a healthy pulp. I don't think that Mr. Witzel can have seen the preparations as they are illustrated, for, by his method of preparing his microscopic specimens, he will only be able to see the periphery of the pulp, and, therefore, be unable to note the changes that have been effected by the arsenic within the pulp. The conclusions, therefore, are more in the nature of hypothesis than ascertained fact. He says, also, that no pulp can be saved with oxychloride capping. About seven years ago I filled a canine tooth for a relation of mine, capping the pulp with that material, and two or three years later I took that filling out and found the pulp in a healthy condition. I again capped the pulp with creosote and oxide of zinc. About a year ago, I think, I saw the tooth again, and the pulp is yet alive and in a very good condition, although it has not been covered by any deposit of secondary dentine. Mr. Witzel thinks that Americans never use anything but oxychloride of zinc for capping exposed pulps, and with this idea of us he supposes that any other material but the oxychloride of zinc, is a novelty to us. The drawings by the celebrated Dr. Heitzman of Vienna, are beautifully executed, but too diagrammatic. I have examined a few pulps but have never been able to see an artery in one, as illustrated, though I will not say there are none. As I have examined only a limited number of sections of pulps, perhaps not more than twenty, I am unable to positively deny the existence of larger vessels than capillaries within that organ. A question was here asked Dr. Bödecker in regard to there being blood vessels in the pulp, in reply to which he said: "I have

only thus far met with capillaries, but when I have finished some experiments I am now conducting relative to the use of arsenic, as well as upon the general anatomy, I will be able to say whether there are arteries in the pulps.

Dr. J. G. W. WARNER, Boston: I presume the gentleman means by arteries, no blood vessels, but simply small capillaries. If there were no arteries in the pulp, how could we have palpitation of the pulp, as I have seen it three times very distinctly, just as perfectly as at the radial artery, every time the heart beats? I think it cannot be otherwise than that there are arteries in the pulp.

Dr. E. A. BOGUE, New York: I fancy I shall be out of order, but if allowed I should like to ask a question in this same direction. Our friend Dr. Atkinson squelched the entire First District Society a few months ago, by speaking of that "exploded notion" of arteries in the pulp. I confess I felt myself very flat, because I always supposed there were such. The question arises, which of these gentlemen has investigated the subject. I would like to ask them to inform us whether the term artery is to be applied to a vessel having three coats, or whether to one with two, or possibly with one coat. I have been able to get no definition, although I have asked two of these gentlemen in private. I too have seen the pulsations just spoken of. I am so much in the dark, and have sought so often for light, I venture to seek it here, and ask the gentlemen to set us all right.

Dr. BÖDECKER: As I have said before, I discriminate between an artery and a capillary: that the former has a distinctly visible muscular coat, and I have not seen a vessel in the pulp that had such a coat; but I do not say there might not be one, because I have not examined a sufficient number of pulps to enable me to say there are none; but I only say that in those I have examined I have never been able to see a single vessel that had any muscular fibre. On the outside I myself have seen the pulsation of the pulp. Arteries go into the pulp and divide right away on entering it, and in making the sections of the pulp I might have lost the part containing the artery.

Dr. BOGUE: I would like to know whether foetal pulps have ever been examined.

Dr. BÖDECKER: I have examined a few, and at the very base of the tooth you see an artery, and a great abundance of small vessels, but on entering the pulp chamber they are seen only as capillaries.

Dr. BOGUE: If it enters the pulp for some distance it may become capillary by losing its coating of fibres.

Dr. BÖDECKER: Yes, but it loses its character too; it may pulsate by the pressure of the blood from the artery which is so near.

Dr. W. H. ATKINSON, of New York: Dr. Bödecker is not dogmatical enough in asserting what he knows. Now there is not an embryologist living, who is worthy of the name, who will take the ground that there are three coats on the vessels in the dental pulp; and any individual who is an anatomist will be able to see that there are many vessels coming in at the base of the pulp. These large vessels that you see in the pulp are what we call sinuses, as shown in embryological investigation. If we would pay more attention to nature, and not go to Germany and France, we would be in a more receptive mood to grasp the truth as it is brought before us. I am so desirous of rendering my brethren faithful service that I invite any of them who doubt to come to my house and be convinced. I make this invitation in order that you may investigate for yourselves, and not contaminate your minds with the false interpretations that pertain to every book on histology yet published that I have ever seen. How do blood-vessels originate? By blood islands in protoplastic matter. Did anyone ever see an artery enlarge in its course from the heart? If this is true that there are arteries in the pulp, why is it that their bleeding is stopped by burring down upon them?

Dr. Atkinson spoke in a denunciatory way of Witzel's work, saying: I want to speak about the action of arsenic, that this learned gentleman says has only a limited power to change the condition of the pulp. Does any man forget how we preserve subjects from going into decomposition by the use of a very small particle of arsenic? I have seen this applied to the web of a frog's foot, and the whole body of the frog was not only killed outright, but preserved so as to be monumental testimony of the power to kill not only a very limited portion of the tissue to which it is applied, but to kill and preserve it from disintegration to the outermost 'limits' of the entire organism.

In 1866 I had a very interesting case of exposure of the corona of an inferior first molar. There was much discussion among the class then under instruction as to the possibility of preserving alive any pulp that had bled. To elucidate, the following case was cited: the pulp with four corona exposed was covered with oxychloride of zinc. Three of them were protected by secondary dentine, while the fourth, which was uncovered a number of times to show the manner of calcific deposit, finally died from the effect of frequent exposures. Just let me say in conclusion that if you want any light on histology, just lock up all the old books; and don't translate Witzel, if you love the truth.

I want, however, to be on record as saying that I know one histologist who is worthy of confidence; and his name is Karl Heitzman, of New York. He came to this country about four years ago from Vienna, where he was not appreciated, and was subjected to ill-treatment. So he said, 'I will go where there is an opportunity to speak the truth more freely, and where I can promulgate the discoveries I have made.' And in pursuance of this determination he came to New York.

Dr. ATKINSON at this point read the report on "Nomenclature and Terminology," being a continuation of the report submitted last year. The report was very exhaustive and thorough, opening with a suggestion for the improvement of the spelling of one of the varieties of universal form, given in last year's report, and submitting an enlarged list of terminations. It being impossible to convey a just conception of the report in an abstract, we do not attempt to publish one.

Adjourned.

3d DAY—MORNING SESSION.

The Association was called to order at the usual hour. President MCKELLOPS in the chair.

Dr. TAFT, as Chairman of the Committee appointed to consider the suggestions contained in the president's annual address, reported that many of the questions contained therein have already been disposed of by the action of the Association. In reference to the encouragement of manufacturers and inventors to exhibit their goods at the meetings of the Association, the committee believed that would be practically effected by individual members through the law of supply and demand in the course of business, without any direct action on the part of the Association. The committee recommend that copies of the transactions, when printed, be distributed to such public libraries as may be designated by the Association. The most important suggestion held by the committee is that relating to the concentration of the strength of the profession into one national body, instead of dividing it into three, as now. A committee was appointed last year with the understanding that it would consider this subject and report on it at this meeting. It is hoped that committee will make such suggestions as will lead to this most desirable result, and that this Association will take steps looking directly to that end.

Dr. SHEPARD: I would move an amendment to the report, viz.: To alter the phrase, "such libraries as may be designated by the Associa-

tion," in such a way as to make it read "such libraries as the publication committee may select." The formal action of the Association, it seems to me, is not necessary ; but the publication committee would be the proper authority to attend to that. The amendment was accepted, and the report as amended was adopted.

REGULAR MONTHLY MEETING OF THE FIRST DISTRICT
DENTAL SOCIETY OF THE STATE OF NEW YORK,
HELD AT THE OFFICE OF DR. F. A. BISHOP, DECEMBER 2, 1879.

DR. CHARLES MILLER: I wish to present to the notice of this Society an article called "Dental Fiber." It is a very excellent thing in polishing fillings; and in any work you wish done between the teeth, where the teeth are close together, and you have an amalgam filling, or anything of that kind, you can pass this through very readily. It is better than silk, as silk will drag on the filling ; this does not. It puts an excellent polish on a filling. There is a small amount here, and the gentlemen may have some to try it. If they will take this and rub a little of it on a silver coin they will see what effect it has on that. It is a fiber from the leaf of the Tucum tree. The gentleman who has furnished me with this sample lives in Brooklyn, and he will soon have it in the market. He has sent for it. It comes from Brazil, I think. I have used it over two years and find it an excellent thing.

DR. W. H. ATKINSON: I presume I have a right to say the thing that is an honest conviction of mine, and is, as I believe, for the benefit of the profession and brethren I love, and especially the young men who may be led astray from misapprehension. I would say that in my opinion this article is worth nothing at all. It is too short of fiber, and is too unpleasant to put between the teeth of any patient who has a high-toned, nervous organization. It is the toughest thing I have ever tried to put between the teeth. It is too short a fiber. It is simply the wood fiber of the bark coming from a species of the cactus family, and is known as Tucum, and they can took-'em who want to.

DR. GEO. W. WELD: I hold in my hand, gentlemen, something that resembles a fan—it is a fan if you hold it in this shape, but if you pull this cord you have an audiphone, an instrument which enables the deaf

to hear ordinary conversation by simply placing it between the teeth, and helps those who are born deaf and dumb to learn how to speak. I brought it here this evening in order to show as much as possible the manner and method by which a certain portion of the audiphone is cut out to fit the teeth. It has been used hitherto by putting it between the front teeth; but it has been found that by pressing it on the labial portion of the centrals, and near the cervical portions, the sound is increased; and, as we cut out the audiphone so as to fit the six front teeth, the volume of sound increases just in proportion to the number of teeth it comes in contact with. An impression is taken, and a plaster cast obtained, of the six front teeth. A strip of gutta percha is then softened and pressed against the labial surfaces of the plaster teeth, which, after becoming hard, is trimmed, and the form of the teeth traced on paper, which in turn is pasted near the edge of the audiphone. The instrument can then be easily and perfectly filed down to the paper. It makes but little difference whether the teeth are artificial or not; the nerves of the teeth have nothing to do with the conducting of sound. Neither does the external ear have anything to do with the sound. It comes simply through the teeth by being intimately connected with the jaw bone, conducting the sound internally to the auditory nerve. If the artificial teeth fit tightly the sound can be conducted through them and the jaw bone in the same way, though, perhaps, not as well as when the teeth are natural. I have had three cases who have made use of the audiphone, and they say they have benefited by it. One said he could hear a piano, which he had not heard before for years. The others state that they have been to lectures and church, and hear as they never heard before. I would also say that the difference between this and the ear-trumpet is, that where an ear-trumpet is used, a person speaking to a deaf person is obliged to put his mouth close to the instrument, but with the audiphone the vibration is the same near at hand or some distance away. The agents for this instrument in the city are Caswell & Hazard.

NOTE.—Since making the above remarks some doubt has been expressed as to the benefit derived by cutting away the audiphone as described. It may be observed that in its use some persons can hear more distinctly through the canines, while others hear better through the central incisors. Some who use it are not benefited at all, but that a great majority are benefited there seems to be no doubt.

INCIDENTS OF OFFICE PRACTICE.

Dr. C. E. LATIMER: I desire to say just a few words in regard to the

case I spoke of at the last meeting, where the left central incisor was first broken transversely through the middle of the crown, and also knocked out. The patient was a boy eleven years of age. The alveolus was split through, leaving the centrals and laterals very loose. I replaced the root with the half crown, having removed the pulp and filled with white oxychloride, and the crown with gold. At the next appointment I found the tooth had been projected too much, the difficulty being that, having left it down on a line with the other teeth in replacing it, to prevent it from being too short, there was not space for the tooth to occupy its natural position, and it had been forced out too much. I extracted the tooth, which required considerable force, and cut away the inside so as to allow the teeth to close, then put the tooth back again, and it is now firm in its socket, making a very good-looking tooth. I fastened it in with oxychloride when I first replaced it, filling between that and the adjoining teeth, thus holding likewise the lateral incisors, which were very loose from the splitting of the alveolus. The pulp in the other root which was not knocked out, but merely broken off, I had to devitalize and remove. I filled the root, and propose next spring to put on an artificial crown.

Dr. W. H. ATKINSON: I have one case that interests me somewhat, and I feel it my duty to present it before this, my pet Society, because it exhibits, if my impressions are correct, the prevalent opinion of the public regarding dentists and dentistry.

Three weeks ago a young man was brought to me through the advice of a member of our fraternity, and upon examination I found the left side of his inferior maxilla was fractured so that the posterior fragment, including the ramus and angle of the jaw, was drawn up. When I first saw it, I thought it was a luxated tooth, but as soon as I made the examination I discovered that it was a fracture, and that in consequence of the tonic contraction of the muscle it was drawing it out of line. The six year molar, (that pet of mine), had gone in the way of ruthless ignorance, out of the mouth, and left its site a weakened point. When the boy fell the tooth was not luxated. It was the twelfth year molar, the second of the permanent series. The boy being not yet quite sixteen, had not erupted his third molar. He was hardly recovered from the depression consequent upon the injury, when he was presented to me, and I made the examination. I gave him an ounce of brandy with a little water in it, and proceeded to set the jaw. It was less than two hours from the time of the fall when he was presented to me. I ad-

justed the fracture with the assistance of my two pupils and a reputable surgeon of this city, who casually chanced to be in the office. I tied an ordinary silk ligature around the tooth with the surgeon's knot, and cast a few more knots upon that to give it a little more strength, so as to cover the chasm between the molar and second bicuspid, and tied to the first and second bicuspid. Then I took a heavy cord simply for the purpose of holding the position. Then with another cord that was only double ordinary floss silk twisted, I tied very securely again on the molar, and made a succession of knots, so that I was certain I had good tension, and tied to the jaw, and second bicuspid and cuspid, and all the incisors. Now the point comes that I wish to speak of. His father asked "can he go to business to-morrow?" It seems he was just entering upon business, and the next day was to be his first in his new position, and they were very anxious he should go. I said, "if he is willing to go with his face tied up; if he is willing to have a fixture put on to hold the jaw in position; but I would not advise his going to business unless it is particularly necessary." Then I said "you will kindly come to-morrow morning and I will see further what is necessary to be done;" and they agreed to do so. I had laid out in my mind what would be further done. At that time the mother came in. It seems they had sent a telegram for her, but did not inform her of the nature of the difficulty at all, and she had asked the father something about it, and I was not aware that there was any disposition to keep the knowledge of the true condition of the boy from her; and I told her he was all right, he had simply had a fracture of his jaw, and it was now set, and he was past the point of danger. She almost went into hysterics, and said, "you must send for my doctor, etc." Then I saw some consultation between the son and father and mother that I did not understand. However, they went away. And now I want to say to the younger men, and older men too, who do not know how to diagnose a case, when you have any concussion of the brain, or supposed concussion, and your patient has been thrown into an abnormal condition of the functions, don't let your patient out of your sight until he is either absolutely normal in all his manifestations or functions, or until he has vomited right well. The boy vomited, and I knew he was all right. Well, he did not come Monday morning, and of course I felt anxious, and began revolving in my mind, "What is my duty to that child?" "I know the condition in which he is, and probably better than any one else knows it." While thinking of that, other patients came in and kept me so busy that I could not go

until after 2 o'clock had arrived, which is the termination of my office hours ; and then my intuition came to me : "It is their duty to come here, and not your duty to go there." So it went on for a week, and a little more, I believe. Then a servant came in with a note from the father, saying, " My son was so weak when we got home, we sent for our family physician, and he is in his hands. Will you send your bill ? I wish to say our physician commends very highly the work you have done for my son." I could not understand the reason for this, and the point was not cleared up until to-day, when I saw the gentleman who sent the parties to me, and then it appeared that the surgeon took it for granted that I was *only a dentist*, and he was the man *par excellence*, without consulting me, to take the case now, and by such a course of action I consider that a physician or surgeon, I don't care who he is or where he is, presents an unwarranted insult to his professional brethren, no matter to what branch of the profession they belong, whether medical, surgical, or dental. I felt a little sore about it, but then I resolved to leave that, as I do all else, to my Heavenly Father to take care of, and thought it would be an excellent occasion to tell my brethren how long suffering and patient we must be, and what slights and insults we must put up with if we persevere in our endeavors to benefit poor human nature.

DR. J. ADAMS BISHOP : Last April, an old gentleman seventy years old, had the misfortune to receive a fall down stairs by which his jaw

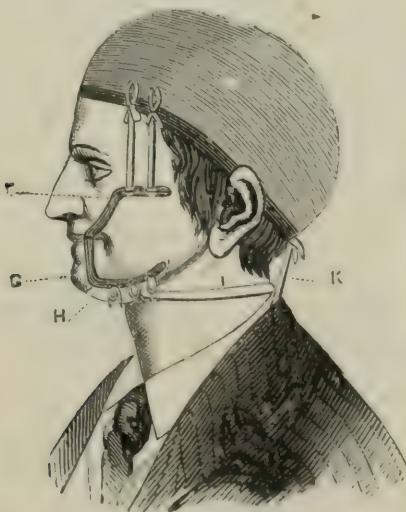


FIG. 1.

F upper wing ; G lower wing ; H metal band to hold the jaw up in the splint ; I neck strap to keep the band back ; K balance strap to hold the cap in place.

was fractured. The old gentleman had not a tooth in his head, and in the absence of teeth there was no other way to control the fracture than by such an arrangement as that shown in Fig. 1.*

This was placed into the mouth and supported above and below, as represented, and I never saw a jaw mend so rapidly as this. He had it in his mouth six weeks and was about his work every day. The jaw was broken just where the eye tooth would come, so that you could open it and put your finger through the fracture.

Dr. NORMAN W. KINGSLEY: I have had cases of a similar character, but have never found any necessity for using an arrangement of that kind, or any thing that was attached to the top of the head. I have given some attention to this subject, and I think there is a principle involved that is very simple. If I understand the case described, the teeth were all out of the jaw, both above and below, consequently there was no necessity of attempting to bring the lower jaw into that accuracy of coaptation required for a perfect occlusion of teeth, as there were no teeth there. When there are teeth in the mouth it is of the utmost importance that the fragments be brought together with that delicacy of occlusion which we all know is natural and exact. When teeth are in the mouth of a broken jaw it requires the nicest kind of a fixture to make the occlusion exact and perfect, if one fragment is left the tenth part of an inch out of line, mastication with that part of the jaw is destroyed. But where there are no teeth in the mouth it is not difficult to bring the fragments of a fracture into their proper relations to each other. For all fractures of the lower jaw, I have never found it necessary to make anything else than a splint for the lower jaw, within the mouth, with some kind of an arrangement that shall pass outside of the lips and cheeks, and form a kind of clamp underneath the chin and jaw. Now, this principle is not a new one. It is a principle that was tried just one hundred years ago by Chopart and Desault; they both working together and treating fractures of the jaw by making a clamp, putting the fragments into place, binding them together and leaving the lower jaw free to move. This same principle has been used from time to time ever since, and is, I believe, a simple method of doing the same thing that was done by Dr. Bishop. The objection I would make to that kind of apparatus is that it is unnecessary and compels the patient to take

* These splints were described in a paper read before the New York Academy of Medicine by Dr. T. R. Gunning, June 1st, 1864.

nourishment through an aperture, while one which allows the lower jaw to work with freedom is certainly superior.

Dr. ATKINSON: Suppose the fracture had been at the site of the first or second molar?

Dr. KINGSLEY: So long as you can get hold of the posterior fragment you would accomplish the object. No interdental splint is of especial value when you cannot clamp across the fracture and bind the fragments on both sides. Dr. Bean's method of treating fractures, which was introduced into the Confederate army in 1864, was, it strikes me, also somewhat unnecessary, for there he had a clamp bound to the lower jaw, and then a bandage over the head. Now as I said before, if the clamp upon the lower jaw is properly fitted, and the jaw bound firmly to it, the jaw is free to move, and does not need any bandage.

Dr. ATKINSON: I have purposely named that position because it is the insertion of the muscle that would prevent the movement to occur at that point. You have referred to the movement of the jaw, but don't tell the reason why the difficulty should be there. It is simply because the fragment is detached.

Dr. BISHOP: I will pass around this instrument [Fig. 1] so that you can see how this splint is adjusted. As Dr. Kingsley remarks, I could have got along entirely without the upper portion; but being one hundred and fifty miles away, I had to be prepared for any emergency. There is the shape of the splint precisely as it was worn; and being a laboring man, one who was going to take hold of the plow and perform severe manual labor, it was necessary that the fixture should be firm and strong, and the result which I obtained seems to be proof that this was the very best possible way of treating such a fracture.

Last June a laboring man was injured, and the lower jaw was broken between the eye tooth and first bicuspid. He was taken to the hospital

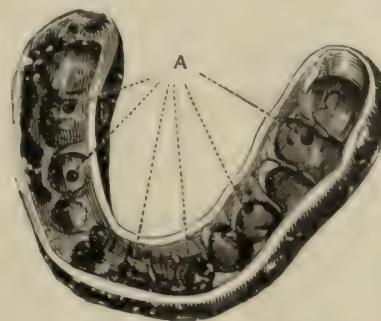


FIG. 2.

and came into my hands, and there is a splint I had upon his jaw, with-

out any bandage at all (exhibiting to the Society form of splint shown in Fig. 2). He had the free use of the mouth, and in seven weeks it was removed. That splint is almost as strong as the bone itself, and could not fail. Two weeks ago I had a case of a tumor, laying back of the soft palate. The case was from the western part of this State, and was brought here to a surgeon to be operated upon. It was so large the surgeon thought he would have to saw the lower jaw at the first molar, left side, and dislocate it in order to remove the tumor, and in that case he would want a splint made, and before he operated I had a splint made that fitted perfectly. The tumor was removed without injury to the jaw. The appliance was put on to show what was purposed to be done for the man, and it fitted very firmly; the jaw could not have moved a particle.

Dr. WEBB, of Lancaster, Pennsylvania, who was present, was invited to exhibit to the Society a case of gold filling which he had presented at the meeting of the clinic in the afternoon. The doctor consented to do so, but as it would require some time, and necessitate the use of a dental chair, it was decided to postpone the case until the adjournment of the meeting.

Dr. W. F. BOEDECKER here read the first of a series of papers upon "*Pericementum and Pericementitis.*" The paper having already appeared in one of the dental journals, we do not republish it.

REPLANTATION OF TEETH.

Editorial in the *Monthly Review of Dental Surgery*.

The history of the Replantation of Teeth is so well known that we need not here reiterate it. But from the time of Hunter, who made known the possibility of transplanting teeth, and also wrote upon replanting teeth, these methods of treatment have been practiced by numerous individuals, both in Europe and in America.

The question of replanting teeth appears to have had a somewhat spasmodic existence, and it has, notably during the present year, again been brought prominently before the profession.

In the number for March, 1879, of the "*Bulletins et Memoires de la Société de Chirurgie*," there is a very long paper by Dr. Magitot on this subject, containing a report of fifty cases. An epitome of this article was read by Mr. Charles S. Tomes, before the Odontological Society of

Great Britain in March last (see page 160 of the *Review*). In our February number, page 55, there is an article on Replantation by Mr. George Torpey; and again in this issue, at page 521, there is published a very excellent lecture by Dr. Thompson.

From all that has been written on this subject we may set forth the following conclusions:

Where the periosteum is healthy, teeth may be extracted, pulp canals filled, and replanted with a large per centage of successes.

Where the periosteum is in a state of chronic inflammation, with the same treatment as before-mentioned, there is a less per centage of successes.

In cases of alveolar abscess the best results are obtained when, in conjunction with replantation, a system of drainage is established.

It is in cases of alveolar abscess which are difficult to treat in the mouth, that the practice of replantation is most justifiable. To obtain drainage of the substances exuded during the healing process different methods have been adopted, such as a fistula through the alveolar process to the apex of the root, and to this may be added a seton; also by having a groove cut in the side of the root, from its apex to the neck of the tooth. But Dr. Thompson has devised a novel method of drainage by having a tube running through the centre of the root and opening upon the grinding surface of the tooth. When the cavity which was occupied by the abscess sac has healed up, and all exudation ceased, the tube can be accurately filled up by a pin, which was adjusted to the tube before replanting the tooth. This principle of drainage adopted by Dr. Thompson is the most complete and effectual, where it can be adopted, of any method hitherto made known; yet we must not overlook the position of a tooth so tubed in the lower jaw, in which case the discharge has to accumulate until it reaches and is taken up by the cotton wool dressing daily placed in the tube; whereas with such teeth in the upper jaw, gravitation favors the exudation quickly passing away. Nevertheless, the practical results, some of which we ourselves have witnessed, in all cases where this system of drainage has been adopted, have been eminently satisfactory.

There are numerous instances of replantation where alveolar abscess had existed, and no drainage had been provided, and the cases have done well. But there are evidently more failures, and less good results obtained, when alveolar abscess is thus treated without drainage, than when drainage is provided for.

When Replanted teeth have become firm and useful, future trouble is not necessarily overcome ; for in the course of one or more years the process of absorption may bring about the loss of the tooth. With the view of reducing the liability to absorption, Dr. Thompson excises the portion of the root denuded of periosteum, and restores this with a cap of gold, through which he also passes the drainage tube. It appears that this cap of gold at the apex of the root has been tolerated, indeed, has not given rise to any perceptible disturbance, for, so far, eight months. Though absorption of the gold is not at all likely, yet any portion of the tooth substance which is contained within the alveolus is liable to be so eaten away. The tendency to destructive absorption of the root may, perhaps, be lessened by the removal of the necrosed portion, which is generally considered as an intolerant irritant ; but it remains for time and observation to teach us whether a foreign substance, such as a gold cap, in this situation is more acceptable to animate nature than the tissue of her deserted habitation.

The position we have attained with regard to Replantation in cases of intractable alveolar abscess may, therefore, be said to be that this treatment, to insure the best results, should be in conjunction with drainage.

A COURSE OF LECTURES ON OPERATIVE DENTAL SURGERY AND THERAPEUTICS, DELIVERED AT THE NATIONAL DENTAL COLLEGE, 1879.

BY W. FINLEY THOMPSON, M.D., D.D.S.

Replanting Teeth Under a New Method.

Synopsis :—Excising the roots, and capping them with gold when denudation has taken place, with the view to arrest absorption; and tubing through the roots for drainage in cases of abscess and extreme periostitis.

In introducing the subject of returning teeth to their natural sockets after removal, it is necessary to preface my lecture by a few remarks explanatory of the position occupied by me concerning replantation. I perfectly understand the disfavor under which it rests with the profession generally, having patiently followed the arguments so decidedly pronounced against it ; and, remembering this, I have carefully pursued my

investigations until I am prompted to ask, is it not barely possible that Hunter may have advanced the theory of Replantation, the outgrowth of his physiological investigations, that has been problematical because not understood? Profound as he was in research and conspicuous over others in his anatomical experiments, we are compelled to consider this emanation as coming from a source to be respected. That, in the absence of the pulp, the low conditioned vitality of the tooth membrane gave him a wide range for thought, culminating in his planting teeth in structures of a similar low conditioned vitality.

Transplanting is a feature in surgery that seems to have been practised by him with more than ordinary pleasure. This, however, I believe can never become popular in the hands of anyone, even the most careful, owing to the difficulty of finding teeth corresponding in form to those lost. While I cannot endorse the treatment for general practice, there are exceptional cases in which teeth may be transplanted and prove valuable organs for many years. I can well understand the enthusiasm with which Hunter pursued his investigations upon this subject, and it seems evident he was sincere in the belief that he had made a discovery in surgery that would result in great benefit to humanity. He says : "I consider when this practice is attended with success, there is a living union between the tooth and socket, and that they receive their nourishment through this. My reasons for this supposition were founded on observations made in practice itself, for I observed they kept their color also upon experiments on living animals. I took a sound tooth from a person's head, then made a pretty deep wound with a lancet in the thick part of a cock's comb, and pressed the fang of the tooth into this wound, and fastened it with thread passed through other parts of the comb. The cock was killed some months after, and I injected the head with a very minute injection : the cone was then taken off and put in very weak acid, and the tooth being softened by this means, I split the comb and tooth into two halves, in the long direction of the tooth. I found the vessels of tooth well injected and observed the external surface of tooth adhered everywhere to comb, by vessels similar to the union of tooth with the gum and socket." I quote this from Hunter's writings, not with a view of advocating the practice of transplanting teeth, but as an argument in favor of Replantation under certain conditions of disease ; and it would appear that this latter mode of treatment did not originate with Hunter, for it had been practised prior to the time of his writing upon the subject. My endorsement of Replantation extends no

farther than the confidence inspired from observations where this treatment, in conjunction with capping and tubing, has been successfully followed when other methods have failed. I would again qualify my remarks by saying that I am a believer in this new mode of practice only to the extent in which I have *seen* beneficial results *practically demonstrated*; and while I am favorably impressed with this treatment in certain cases, it is as yet too new to positively predict any future position it may occupy in the profession. I submit, however, for your consideration this evening, a few of the cases that have been under treatment by me in this new way during the last eight months; these number twenty-one. In forty-five other cases I have filled roots and crowns and replanted.

In the opening of these lectures I dwelt very briefly on the histology of the teeth, I shall now revert to it again with a view of more fully explaining the conditions under which a tooth having been dismembered from the body may again be re-established to a comparatively normal condition of health; and to better illustrate my remarks, I have had this model prepared (a large plaster model of a tooth). The three hard tissues of the tooth are formed of plaster of Paris, the pulp of wax, and the vascular periosteum is glazed on with oil color. No very marked difference in color could be used to distinguish with truthfulness the enamel, the cementum and the dentine; but I have had the hexagonal prisms of the enamel, the lacunæ and the canaliculi of the cementum, the interglobular spaces, &c., of the dentine engraved on the sectional surfaces presented to view, so as to give a better idea of the tooth structure.

In the formation of the teeth in the gum covering the previously existing jaws, we see the building up of a remarkable organization, extra-neous to the superior and inferior maxillary bones, though secondarily and indirectly united with them to form a part of the oral cavity, and especially to serve the purpose of mastication. Resting in the alveolar process surmounting the jaw, the teeth are surrounded with life-giving tissues up to the commencement of the enamel cap; nerves, arteries and veins enter the pulp through the apices of the roots and ramify, intermingle and interloop themselves in the pulp, supplying pabulum to the dentine while the process of calcification goes on. Upon the cementum, and between it and the alveolar process, is situate the vascular periosteum; vessels enter the periosteum from the alveolar process, the gum and the pulp vessels, and form themselves into a fine network or plexus throughout the whole of its structure.

We see, then, that the tooth is well cared for—externally as well as internally; and, in a normal condition, the possessor of this exquisite piece of mechanism is scarcely aware of its existence. When, however, caries enters the domain, piercing the citadel of this living pulp, the death blow is struck, and with the loss of the pulp, the periosteal membrane alone is called upon to supply pabulum, apparently necessary to nourish what is almost a foreign substance in the jaw. Here again do we see a wonderful provision made by nature in an emergency of this kind, by the periosteum, when not impaired by disease, assuming a long continued devotion to this portion of the animal economy, which would otherwise be rejected.

The tooth is extracted, and the living periosteum with its plexus of microscopic vessels is, in part or entirely, removed with it. The tooth is filled, as will hereafter be described, and in a short time after being returned to its socket, adhesion occurs and the tooth is again nourished, but not to its original perfection, yet sufficient to restore it to usefulness. Circulation in the periosteum is re-established, but whether the pre-existing vessels become the channels of the blood, which is not at all likely, or there is a new system of vessels developed, as in union by adhesive inflammation, is a matter for enquiry.

The reason replantation has not been more generally followed is, perhaps, that up to the present time it has continued experimental in hopeless cases for treatment in the mouth, successes being counterbalanced by failures. In the incipient stages of periostitis leading to alveolar abscess, nature provides a remedy by the process of absorption of the products of inflammation; and in instances of this kind the treatment is simple, being locally and constitutionally antiphlogistic. Such cases can, by the intelligent practitioner, be successfully treated in the mouth; but, in the more aggravated forms of the disease, it is not so easy to arrive at a satisfactory solution of the requirements to meet the exigency of the case. It is more difficult to define the pathological condition that will permit replacement of teeth without drainage; for, in these cases, we must look for complications beyond and quite remote from the immediate trouble. I here refer more especially to cases where constitutional diseases predominate, such as syphilis; tendencies to necrosis of the jaw, as may be found in workers of phosphorous; sufferers from long continued use of mercury; and also to a more immediate and sometimes puzzling cause of complaint, namely, exostosis of the apical portion of the roots.

To me this subject has been one of great interest, although I cannot recall my earlier efforts at replanting with any degree of pleasure. I believe, however, that the cases formerly lost might have been saved with my present mode of treatment, for I would not now attempt to replant teeth of a similar character without proper drainage.

The late discussions in Europe have again interested me in the subject, and a few months since I began another series of experiments with better results. Not, however, in the first two attempts, as I lost the teeth in both instances; but the probable causes of failure I shall endeavor to explain further on.

In the April number of the *Monthly Review of Dental Surgery* of this year, there is an epitome of Magitot's paper upon replantation of teeth, read before the Odontological Society of Great Britain by Mr. Charles S. Tomes. Following the reading of the paper the subject was fully and ably discussed, resulting in a general declared necessity for an open fistula in severe cases of chronic periostitis—after replanting—to permit of drainage, and to re-establish a solid union of the lacerated parts. The importance of this cannot be over estimated when we consider that a more or less extended inflammation follows the restoration of the tooth to its socket. This inflammation being in part caused by suppressed morbid secretions which nature persistently demands an outlet for; and unless a temporary drainage is established, the tooth is forcibly ejected from its socket. Mr. Tomes very justly remarked "there is no anatomical reason whatever why perfect union of the periosteum should not take place, and doubtless it does take place, so that presumably these replanted teeth may, in the most successful cases, have as much real connection with surrounding parts as any dead tooth has. But there is an accident to which replanted teeth are liable, which I do not see how we can contend against, and that is complete absorption of the roots."

It is with a view of preventing this absorption that I have practised a method of excising a portion of the roots, and restoring the portion so removed with a cap of gold. My first case, one of some eight months standing, has thus far proved very satisfactory, the patient apparently enjoying all the privileges of a sound tooth. The length of time, however, is not sufficient to warrant the assertion that absorption may not take place. I shall endeavor to watch the several cases so treated, and hope at a later period to give the results in a more decided form to the profession.

Through the kindness of Dr. George W. Field, I am permitted to

cite a case that was of long standing, and obstinate to every treatment. The patient was troubled with chronic alveolar abscess, and had been under the doctor's care for a period of six months. In discussing the case with me, I suggested tubing, mentioning that I had been practicing it with very gratifying results. The treatment was adopted by Dr. Field, and he afterwards informed me that a cure had been effected at one sitting.

The success of the operation, however, resolves itself into many considerations, of which the following are some of the more important, viz.: a careful diagnosis of the condition of the mouth; health of the patient; resisting strength of the tooth under the forceps; its position, attachments, and relationship to other teeth; formation of the alveolus, whether bulging or not; condition of the crown, roots, etc.; and, after extraction, a careful investigation of the covering membrane of the roots of the tooth to be operated upon.

Difficulty is occasionally experienced in attempting to remove the tooth without fracture to the process; especially is this the case with superior molars, and it also sometimes occurs in extracting lower molars. For this reason the patient is better under the influence of an anæsthetic while the tooth is being removed. After the extraction of the tooth the socket should be injected with warm carbolized water, and within a few moments a tent, made of cotton loosely rolled, conforming in size to the alveolar cavity, and having a silk ligature attached, should be gently introduced into the socket, the ends of the ligature extending outside the orifice of the cavity, so that the cotton may afterwards be easily removed, with no chance of any remaining unrecovered, for this might prove the exciting cause of trismus.

We now come to a consideration of the method of preparing the tooth for its return to the socket. The tooth being successfully removed, I would again call your attention to a careful investigation of the covering membrane of its roots, whether denudation has taken place, and if so, to what extent. Not only must you take into consideration the condition of the roots, but your attention should be particularly directed to the gum and the process, whether they are healthy, or in a state of atrophy. As the periodontal membrane will afterwards be dependent upon these tissues for its nourishment, you may expect to find its condition analogous to that of theirs. You must exercise judgment as to when, and under what circumstances, teeth may be restored to their sockets after removal; for it is not to be supposed that every tooth extracted can

be replanted. There are certain stages of the disease that will permit a return of the tooth without tubing; but if denudation has commenced previous to removal, the roots should be excised and capped with a view to arrest absorption, or rather to prevent a more rapid waste, for the tooth having once lost its pulp, necessarily undergoes a certain condition of atrophy.

There are also certain conditions under which teeth cannot be tubed; and I am now trying a method of capping in such cases, and obtaining drainage through the alveolar process, by making an opening opposite the apex of the root, the results of which I shall give at a later period.

Teeth may sometimes be replaced, when capped, without tubing; but never under any circumstances should I consider it justifiable to tube without capping, on account of the external fracture that would be produced upon the root. In cases of chronic abscess with an open fistula through the gum, where the apical portion of the root is supposed to have lost its periosteum, the tooth should be extracted and the denuded part excised. The cap may now be filled with gutta percha, warmed, and gently pressed to its position, thereby preventing the secretions from coming in contact with the end of the root after its return. Great care should be taken that the tooth is restored to very nearly its original length; the cap to be made of pure gold, and oviform, while the edges should be very thin, so that they may pass over the end of the root, and if possible underneath the periosteal membrane. The tooth can then be replaced, the fistula answering the purpose of a drainage tube.

It is on the principle of sealing or protecting the end of the root that we expect to prevent absorption (see fig. 9, d). Where there is no open

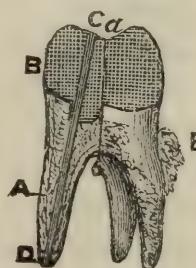


FIG. 9.

Fig. 9 represents an upper molar of the palatine root of which a section has been made. *a b* indicates the line of section. Which section shows at—

- A the nerve canal filled with oxychloride of zinc.
- B the gold filling.
- C the tube, running the whole length of tooth.
- D the gold cap.
- E reflected periosteum.

fistula it is necessary to introduce a drainage tube of gold through the roots (letter c). In every case so operated upon I have had the most satisfactory results, the tooth being permitted to settle into and remain firm in its socket during the process of reuniting. In fig. 10 will be noticed an abnormal condition often seen upon the roots of extracted teeth. The treatment ordinarily adopted in such cases would extend over a very uncertain period, perhaps weeks or even months without success. If, however, the disease is controlled, the tough and tenacious cyst upon the root is simply lulled into a passive state, which, upon the slightest provocation by exposure, may manifest itself again in a still more aggravated form. Other instances have come under my notice where faithful and persistent treatment has *utterly* failed to give relief, the disease having passed into a stage in which the pain was only temporarily reduced in violence by holding iced water in the mouth; the retarded vascular action, of course, being each time followed by a more intensified condition of suffering from a still greater determination of blood to the parts, caused by shock of thermal changes. Again, we have seemingly incurable cases of neuralgia, the diagnostic symptoms being entirely lost. These cases are confusing to both physician and dentist, as the causes appear to be neither constitutional nor local; the physician's prescriptions being powerless to mitigate, while the topical applications of the dentist are quite as futile. A case of this description came under my care some months since, the cause of which I believed to be attributable wholly to exostosis of the root. These different conditions of the disease are practical illustrations of the difficulties to be contended with in daily professional life, and have a direct bearing upon our subject this evening.

I shall now engage your attention with a few interesting cases that have been under treatment by the method of tubing and capping. My first case was that of a young lady who consulted me in regard to the treatment of an inferior left molar. Remembering my previous ineffectual efforts in replanting, yet believing the tooth to be beyond the power of treatment in the mouth, I concluded to try the experiment of tubing through the roots; this was done, and the tooth returned to its socket with ultimate good results.

The second was a case of a young man of nervous, sanguine temperament, and apparently in good health. I was consulted in regard to a first inferior molar, right side, which I found extremely sensitive to touch, slightly elongated, and a continuous throbbing sensation was experienced at the apex of the root. The tooth had been subject to frequent attacks

of this kind, extending over a period of three years, but never in so severe a form as at the time it came under my notice. This seemed to be an unfavorable case for treatment in the mouth, and I decided to remove the tooth, fill and replant it, which was done without tubing. The patient enjoyed immunity from pain for a period of thirty-six hours, when symptoms of trouble again returned, and he expressed himself as suffering, not only in the face and jaw, but from lacerating pain extending to the temples, and down the neck to the shoulders. During the exacerbations, which were more frequent and violent as the malady advanced, he petitioned the removal of the tooth; and, as the manifestations were premonitory of a more aggravated form of trouble, it was done.

I now consider that this tooth was lost from my neglect to tube and cap.

The next was a case of a middle aged gentleman, phlegmatic temperament, who came to me requesting a plate for the left lateral incisor (superior), the other teeth being in good condition. On examination I found that the root still existed, although completely covered by the gum, a circumstance the patient himself was not aware of. I proposed the removal of the root, and grafting a porcelain crown upon it, to which he assented. My first step after extracting was to excise the denuded portion at the apex of the root for a distance of about two lines. I then drilled a canal through the centre the same size as that in Ash's tube tooth. Through both root and tube-tooth I passed an adequate gold wire, to the extremity of which was adapted a small gold cap, such as is used in capping the denuded roots of replanted teeth. I then returned the tooth to its socket, and in fourteen days lost it. For ten days the tooth seemed to be getting firmer, and the gum freer from hyperæmia; it then assumed a threatening form which increased until I had to remove it.

I am in doubt about this case, as the periosteal membrane seemed in a fairly healthy condition. The tooth, however, might have been ligatured too tightly in its socket, thereby producing death of the membrane from strangulation, all connection with the nutrient vessels being cut off on one side by pressure; or the confined morbid secretions may have set up new inflammation, with results as before named. After improving so rapidly for a time, it became a matter of surprise to me that the tooth was lost. Pivoting as I did, it was difficult to tube.

The next case was that of a young lady, who consulted me concern-

ing an inferior left bicuspid, that had been under treatment. Upon examining, I decided that a heroic course of treatment would accomplish the object and effect a cure. My first application was the cause of such distress that I well nigh lost my patient. She, however, permitted me to continue the treatment, but my most earnest endeavors proved of no avail; and, at last, in a half soliloquizing manner—not knowing what else to do—I suggested the removal of the tooth. This was done, and the same method adopted as in my first case—tubing and capping. No pain was experienced after the first half hour of replanting, further than tenderness to pressure. The hyperæmic condition of the gums began to fade away on the third day, and on the tenth the case was dismissed as cured, no distinguishing difference being observable along the gingival border. I have learned that the tooth has occasioned no trouble since, and that it is apparently more firm in its socket than before treatment. This method proving so satisfactory in these two cases, caused me to become more deeply interested in the subject.



FIG. 10.

Fig. 10 represents an upper molar with abscess sac upon apex of palatine root. The same tooth, after being operated upon, is illustrated by figure 9.

I now call your attention to fig. 10, representing the condition of a tooth upon which were devoted my second efforts in the application of the tube and cap. It was a second superior molar, on the left side, and one that most of you are familiar with, as it was presented before the class during the period of my demonstrations. The pulp had been dead for some five years, and the tooth had been a frequent cause of trouble.

The apical portion of the palatine root presented very much the appearance of that represented in the figure, and its condition after operating will be better understood by referring to fig. 9. This case recovered quite as rapidly as any that has come under my care; and when it was shown to the class—something like a week from the time of replanting—it had nicely settled into its socket, and become firmly attached, the gums quite normal, and the tooth free from pain during the process of mastication.

At the same time and in the same mouth was shown the superior left canine, to which was attached an abscess sac. This was treated without tubing and capping some weeks before, and had become so firmly fixed in its socket that no more movement upon pressure could be observed beyond that to be found in a healthy tooth, the gum being free from any appearance of inflammation.

The next was a case of an inferior right first molar, which was also exhibited to the class. This had been in a diseased condition only a few months; and it was treated in the manner represented by the vertical section fig. 11. A cure was rapidly effected, the tooth becoming firm, and the soft tissues apparently healing, as might be expected of any ordinary flesh wound.

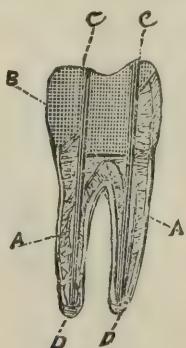


FIG. 11.

Fig. 11 represents a section of a lower molar. At A A will be seen the nerve canals filled with oxychloride of zinc. At D D will be seen the gold caps, while C C represents the tubes running from crown of the tooth through the filling to the apices of the roots. B shows the gold filling.

The next case is the most interesting to me of any that I have to relate; which assumed some of the peculiar characters before alluded to, so puzzling to physician and dentist. This was a case of neuralgia of over two years' standing, the pathological condition of which had not been clearly enough defined to enable the patient to obtain relief. Upon examination I found the second inferior bicuspid, on the left side, with an amalgam filling in it, but with no symptomatic phenomena apparent, the gums appearing in a normal condition, and the tooth firm. However, upon interviewing my patient, I discovered that it had been the cause of trouble sometime before; but the accessions of the attack not being attributable to any appreciable cause, he had placed himself under medical advice for constitutional treatment. Being suspicious of the tooth, I decided to extract it, when the cause of trouble was

explained, there being exostosis of the root. The apical portion of the root was excised, removing the exostosed part, when the same treatment of the tube and cap was adopted as in the previous cases.

The tooth was replaced in its socket, and from the hour of its replanting no further pain was experienced from it. I have since received letters stating that he was entirely cured of his neuralgia. There are some here to-night quite familiar with this case, having seen the tooth after its return.

My first demonstration of Replanting before the class was on the 27th of June, 1879. This was for a young lady who had been under treatment at this Hospital for acute periostitis, in the first inferior right molar. The case not yielding to treatment I removed, filled and Replanted it; this was not tubed nor capped. The patient was dismissed in two weeks, free from tenderness and hyperæmia, a condition still existing five months afterwards. In this instance, as I have observed in the majority of cases Replanted without drainage, the tooth was not so firm as I should like to have seen it.

The next case before the class was an attempt to tube and cap a right central, and after some time being spent over the case it was decided not to Replant, owing to the defective manner in which the cap and tube were made. This case has not been included in the number I have mentioned.

Owing to this failure I appointed a clinic for the class at my own house on the 15th of July, 1879, when I operated upon two teeth in the same mouth, one of which, a superior left central, was tubed and capped, the other, an inferior right second molar, Replanted without that treatment. According to the last information I obtained, they were progressing nicely.

Another case was that of a young lady from one of the provincial towns. I found it to be one of acute periostitis of an inferior left first bicuspid; and no relief could be obtained, except by holding cold water in the mouth. The tooth was extracted, filled without tubing, and returned; up to the tenth day the patient had experienced no pain, farther than tenderness upon pressure. This case a month afterwards was quiet free from tenderness, but not so firm as those which have been tubed.

I would here remark that it has been my aim to operate upon as many cases as I could in the shortest space of time, regardless of the consideration of a fee, that I might the sooner arrive at some definite

conclusions. In a number of mouths two, and in one mouth three teeth have been Replanted, treating both with and without tubing in the same mouth, all of which are being worn with comfort. My belief, from observations and experiments is, that without a system of drainage, Replantation can never become popular, owing to the fact, that unless the tooth is permitted to remain *fixed* in position, and the attachments are formed in the first stages, firmness may never be expected, owing probably to the chronic hypertrophied condition of the periosteal membrane.

I have here recorded a few cases that have been treated without tubing, and also with tubing and capping. From careful observation of results obtained by both methods, I feel convinced that success will be more certainly obtained by capping and tubing than by any other mode of treatment yet advanced, where Replantation is practiced. Yet there are instances, and I have herein mentioned one such case of a canine, in which teeth may be replanted and soon become firmly fixed without any drainage. Nevertheless, these are exceptional cases, and it would appear that their well doing depended upon a complete absorption of the secreted substances, thereby removing the most baneful condition of retained effusion, which retards the healing process and leads to thickening and imperfect reunion of periosteum, consequently to mobility of tooth.

Having entered into a consideration of the complications that may arise—constitutional or local; also having directed attention to certain conditions of disease, where antiphlogistic measures fail to suppress morbid secretions, when treatment is given in the mouth, I shall endeavor to explain the method of tubing and capping. Fig. 11 shows a vertical

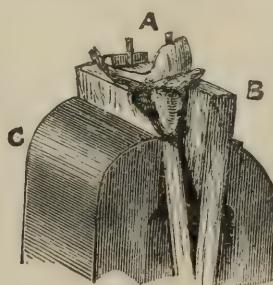


FIG. 12.

Fig. 12 shows the vice C holding the tooth A by means of the wooden clamps B. section of the lower molar, with the tubes and caps in position, extending through the roots of the tooth and filling. If a cyst is found upon

the end of only one root, as in fig. 10, that alone will require tubing; but if both fangs are diseased, it will be necessary to tube both. After the removal of the tooth it should be dropped into warm carbolized water, afterwards carefully wrapped in bibulous paper, saturated in the same solution; it should next be placed in splints of soft wood, shaped in such a manner that when fixed in the vice, and the jaws are forcibly closed (see Fig. 12), that a generally diffused or even pressure may be obtained over the whole surface of the tooth, and the membrane of the root protected against accident.

The roots should then be cleansed of all extraneous matter and filled with oxychloride of zinc, after which the tooth may be removed from the vice, and where denudation has taken place, the root excised. Then, with a flexible drill, the canal should be formed as nearly as possible through the centre, following more or less the direction of the nerve canal. The tube then to be introduced into the canal, and the cap carefully adjusted to the apex, so that no projecting surface be perceptible, otherwise there will ensue irritation of the periosteum of the socket, and consequent inflammation, leading to ejection of the tooth. Other complications of a still more dangerous character may arise from this cause of neglect, as trismus.

Previous to this, however, it is necessary to prepare the cavity of the crown for the reception of the gold filling, but this is now too well understood by you for me to enter into any particulars; nevertheless, I deem it advisable to mention that great care should be taken not to obstruct the tube while building around it. The orifice at the crown should be somewhat funnel-shaped (see fig. 13, A), the reason of which



FIG. 13.

Fig. 13. A represents the tube, C indicating the funnel-like enlargement at one end, while C shows the cap at the other end, one-quarter of which is in section. B represents the pin for closing the tube when the tooth has become once more in a healthy condition, the extremity being somewhat large, and made to fit into the funnel-shaped opening of the tube G. This illustration is twice the actual size.

will be seen at the time of plugging. Care must be observed in regard to the perfect articulation of the tooth when replaced, to avoid all manipulation upon it after its return.

I shall next refer to the gold pin (fig. 13, B) carefully adapted to the tube in size and in length. This to be used only when a pronounced cure has been effected, to hermetically seal all communication with the socket, thus preventing the entrance of all foreign matters, thereby diminishing the danger of secondary affections. The tooth having been prepared according to the foregoing instructions, should be gently introduced into the socket, a small plug of cotton being loosely placed into the orifice of the tube, so that secretions may pass out, at the same time foreign substances are prevented from pressing down into the tooth beyond the cotton. The tube should be kept cleansed by a daily changing of the cotton, the cotton to be supplanted later by the gold pin when the parts have become healthy and united. I also apply to the gums small pads of cotton soaked in a solution of chlorate of potash. Should there be any tendency to expulsion after insertion—as is sometimes the case with incisor and bicuspid teeth—it will be necessary to use a splint or ligature to keep the tooth in place. In this position the tooth should remain from a period of five to seven days, when, if it has become self-sustaining, the splints may be removed, and in a week or ten days later, under ordinarily favorable circumstances, a perfect union should be established.

The patient should, especially during the first four or five days, avoid such solid food as might cause dislocation of the tooth, and furthermore, be warned against needless exposures to changeable temperatures, as I have remarked in cases where the patient has been protected, the cure has been more rapid and sure. I also deem it advisable to have the

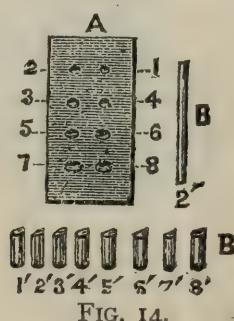


FIG. 14.

Fig. 14 illustrates the steel die plate A, and the punches B B used for striking up the gold caps.

patient use a mouth wash, consisting of a weak solution of the permanganate of potash, as this not only cleanses the mouth, but its disinfectant properties prevent decomposition.

I shall now call your attention to the manner in which the caps are struck up, and by reference to fig. 14 may be seen the die, with different sized and shaped indentations; also punches of the several sizes required to fit them.—*Monthly Review of Dental Surgery.*

BALTIMORE COLLEGE OF DENTAL SURGERY.

The Faculty of the Baltimore College of Dental Surgery invited the dental practitioners of Baltimore city to meet in the college building on Tuesday evening, January 6, 1880, for the purpose of taking action relative to the death of Dr. White.

The meeting, which was largely attended, was called to order by Prof. F. J. S. Gorgas, when, on motion, Dr. Henry H. Keech was elected President, and Dr. J. Emory Scott Secretary.

Prof. Gorgas read a sketch of the life of the late Dr. S. S. White, and also a letter on the same subject from Dr. Wm. H. Atkinson, of New York. Eulogistic remarks were made by the president, Dr. Keech, Dr. A. W. Sweeney and others, and on motion a committee was appointed to draft resolutions of respect to the memory of the deceased. The committee, which consisted of Drs. F. J. S. Gorgas, T. S. Waters, and A. P. Gore, reported the following, which were unanimously adopted :

WHEREAS, The dental practitioners of Baltimore city having been called together to pay a tribute of respect to the memory of the late Dr. Samuel Stockton White, of Philadelphia, whose death may be regarded as both a professional and public loss; therefore be it

Resolved, That the dental practitioners of Baltimore city have learned with deep regret of the death of one who has been for many years closely identified with the dental profession, at that period of life when the mental powers are in their fullest vigor, when his honorable career as an enterprising business man had won for him a world-wide reputation, and whose personal qualities, as exemplified in every relation of life, had secured the warm attachment and high respect of a large circle of devoted friends.

Resolved, That the dental practitioners of Baltimore city fully recognize the obligations American dentistry owes to the late Dr. S. S. White.

through the active agencies he has awakened for the elevation of the science, his devotion to its interests, and the zeal, energy and intelligence he displayed in useful inventions and dental literature.

Resolved, That this expression of appreciation of the worth of the late Dr. Samuel Stockton White, in the form of a copy of these resolutions, be transmitted to the bereaved family of the deceased, and that they also be published in the different dental journals.

Respectfully submitted.

F. J. S. GORGAS,
T. S. WATERS,
A. P. GORE,
Committee.

Professors Gorgas and Winder, on the part of the faculty of the Baltimore College of Dental Surgery, and Dr. H. H. Keech, on the part of the dental practitioners of Baltimore city, were appointed to attend the funeral in Philadelphia.

CHICAGO DENTAL SOCIETY.

Mr. EDITOR: The following resolutions, passed at a meeting of the Chicago Dental Society, Jan. 5th, 1880, I was instructed to forward to *The Dental Miscellany* for publication.

Truly yours,

M. S. DEAN,
Corresponding Secretary.

WHEREAS, The painful intelligence has just reached us that Dr. Samuel S. White has, with appalling suddenness, taken his leave of earth and earthly things, be it therefore,

Resolved, That in his death the nation has lost one of its most energetic, useful and upright citizens, and that the dental profession has been bereft of its noblest benefactor and best friend; one who, in the prosecution of his extended enterprises, advanced the Art, and, by his liberality, fostered the Science of Dentistry.

Resolved, That this Society is especially indebted for the many kind favors which he has bestowed upon it from its first organization up to the present time; and that its members deplore his loss, both as a personal friend and as a gentleman who has been ever true and generous to

the profession of his early adoption, and that we will cherish his many noble qualities in ever grateful remembrance.

Resolved, That we extend to his bereaved family our most sincere and heartfelt sympathy for the great affliction which they have sustained.

PHILADELPHIA DENTAL COLLEGE ALUMNI ASSOCIATION.

A TRIBUTE OF RESPECT TO THE MEMORY OF DR. SAMUEL S. WHITE.

When we say he was a man among men, we give the highest expression to our feelings of our lamented friend. Kindliness of heart—for a generous liberality, a useful life and a completeness in all of its details were his leading characteristics. His death we feel to be (both public and private) a serious loss. To the dental profession he gave his entire time, and of his means, and even life itself, for its advancement. His memory will live long in the hearts of his friends. To his sorrowing family we offer our deepest sympathy for the absence of an affectionate husband, a loving father and an upright man.

Dr. J. LEHMAN EISENBREY,
" J. P. WYMAN,
" L. ASHLEY FAUGHT,
" J. W. WUNDERLICH,
" D. NEALL McQUILLEN,
" CHAS. E. GRAVES,

Committee.

MERCHANDISE MAIL.—CAUTION.—It is a very common thing for dealers to receive merchandise mail packages which do not contain the address of the sender. The Post-office rules permit this address to go with the package if no other writing accompanies it, and attention to this would always prevent delay, and sometime, save absolute loss of the goods sent.

(*From British Journal of Dental Science,*)

OFFICE HINTS.—No. II.

COLLOQUIALLY GIVEN FOR THOSE WHO LIKE TO READ THEM.

“*Justum et tenacem propositi virum.*”

Fees.

Verax (loq.)—Glad you enjoyed your dinner after your long journey this cold weather. As Shakspeare says, “May good digestion wait on appetite and health on both.” Capital wish from a Dentist, my friend, is it not? for himself and his patients. How much better both would fare if the latter knew how much good digestion depends on thorough mastication and thorough mastication on a set of natural teeth in masticating order.

Tenax.—I wish I had a good set of masticating teeth.

V..—You are not likely to if you go on having them ripped out as you do.

T..—Well, you know, if a tooth is once dead, sooner or later it will ache, and out it must come.

V..—So you think, but I do not. Nine out of every ten may be saved, but we will talk of that another night. Now, to-night, if you feel inclined to have a shop talk, I propose a talk about fees, because gentleness, with good work, is impossible without a proper method of making your fees.

T..—It would be quite impossible for you to propose any subject in which I take a deeper interest, and I think I may add in which the whole dental profession take a greater interest than the matter of fees.

V..—Well, now, I will begin by saying that every member of our profession has a perfect right to charge exactly what he likes; therefore, the amount of remuneration that he may consider himself entitled to is simply a matter for himself to decide. But in order that he shall succeed in practice, it is necessary that his system of charges shall be so based as to bear reasonable argument. 1st. Fees must be based on the operator's skill, knowledge and position in his profession, not on the patient's paying powers 2d. Fees must be based on the time consumed in doing work, not on a hard-and-fast line of so much a tooth or so much a stopping; for it is quite clear that you may stop one tooth for Mr. Smith, who sits still and does not talk or fidget, in half an hour; and

exactly a similar tooth for Mr. Jones shall take you to do, no whit better, one hour and a half. Mr. Jones ought, therefore, to pay three times as much as Mr. Smith.

T.—I follow you, and think your argument sound. But supposing a patient objects, or come late?

V.—In the first case, advise the patient to seek another dentist; in the second, caution once, charge next visit for wasted time, on the safe base that a dentist's time is his money.

T.—But think what a number of patients would be lost!

V.—And think how much better the ship would be ballasted; besides which, it is impossible for any one to be gentle and yet do good work unless he is methodical, systematical and firm, and never in a hurry. You may be quite sure that the best practice for paying purposes, is one that runs evenly all the year around, one that is never "awfully busy" or "dreadfully slack."

T.—That is no doubt true; but say, for the sake of argument, that a patient engages two hours, that when he comes he brings his wife and three children, that you attend to all five, and that when the time is up you have performed two operations for each of the five, surely you would not charge the same as if you had taken two hours to fill one tooth?

V.—Indeed, I should.

T.—Well, suppose those five people came, and there was nothing to do for any one of them?

V.—I should say, two hours so much.

T.—But how horror-struck some patients would be.

V.—Just what they ought to be for the future; they would learn not to write for two hours without being sure they required it.

T.—Well, but how are they to be sure?

V.—I would suggest that every Dental surgeon should fix on one or two hours every day for consultation hours, and let the patients know what those hours are. During those hours there should be no appointments made, but the patients should be seen in the order in which they arrive. Patients who make an appointment for a subsequent visit pay no fee. Those to whom you convey the joyful news, "Your mouth is in perfect order," ought to pay with pleasure your minimum fee, as most assuredly ought those who consult you only to insult you by not following your advice.

T.—You say your minimum fee. How would you base it?—how defend it?

V.—My minimum fee is based on half an hour. As to the defence of it, I do not see that any defence is required, because if a patient chooses to keep you half an hour, that time is at his or her service; and if the patient does not choose to require that amount of time, that is no concern of the Dental surgeon.

T.—Well, this is very interesting to me, and I am beginning to look at things relative to fees from a different standpoint. Let me ask you one question. In cases of treatment of dead teeth, separating teeth by wool wedges, dressing sensitive teeth, &c., how would you charge?

V.—Simple enough. As your patient enters your office note the time, ditto on leaving, put the number of minutes against the name. When the case is completed add them together and charge at the rate of so much each half hour or portion of the last half hour. Thus, say in a case of a dead tooth, six visits, averaging twelve minutes each visit, 6 times 12 = 72 = 1 hour 12 minutes, and 2 hours plugging, 3 hours 12 minutes. Charge seven half hours.

T.—But in many cases a fee of that sort would very likely be resisted.

V.—Possibly. But it is based on such a reasonable ground that I think it could be recovered. If patients are so foolish as to permit their teeth to get into such a condition as to require all this time and care, why should they expect the Dental surgeon to bear the labor of it without adequate remuneration, or why expect him so to arrange his fees as that by charging so much per filling he should make his sensible and reasonable patients, who came three or four times a year for inspection, and who have every tooth filled as soon as caries is discovered, pay for those stupid ones who never go to a Dental surgeon until driven into his chair by suffering. Because that is really what the matter resolves itself into.

T.—Well, I must say, I think you have the best of the argument.

V.—And that the best base to fix your fees on is—

T.—Time.

G. P.

ERRATA.

In the report of the transactions of the Connecticut Valley Dental Society, in the December issue of the *MISCELLANY*, page 478, line 5, for “obtain,” read “obtund;” page 481, line 11, for “sure,” read “safe.”

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*March, 1880.*—No. 75.

THOROUGH AND COMFORTABLE DENTISTRY.

C. M. WRIGHT, BASLE, SWITZERLAND.

MR. EDITOR:—Everybody, from Maine to California, is taking a turn at the New Departure doctrines, and the question has certainly been revolving in the minds of dentists in England and the Continent or Europe also. The *gold men* have been stimulated into a defense of their pet material. The amalgam men have taken the opportunity of airing their views, and have become so bold that one would almost believe that the question of the day was *not* the principle proposed by the New Departure advocates, but a question between the relative merits of gold and amalgam as a filling material. This, to my mind, is not the question at all. It is rather, shall we offer *thorough* dentistry to our patients, or *comfortable* dentistry? Amalgam and guttapercha, and the oxychlorides of zinc, are, and have been, employed by the profession at large for many years, and have been acknowledged by the profession as recognized and proper remedies in certain cases. Only a few, comparatively speaking, members of the profession, have, for reasons of their own, really strongly objected to the employment of any of these remedies in certain cases. The New Departure offers reasons for the employment of certain of these remedies, for instance, guttapercha and oxychloride of zinc, and leaky copper alloy amalgams, which, I think, the profession can accept without feeling any great violence having been done to its past practice. Old copper alloy has rusted into cavities and preserved teeth for decades of years. Oxychloride does seem, in many cases, to cure

or restore a healthy action in dentine, to harden the surface to which it is applied. Guttapercha does preserve from and prevent decay in teeth when introduced in a rapid and, perhaps, slovenly manner, where no other known material applied in the same easy, rapid, comfortable and we may add, slovenly way, *could* prevent decay. And here are the facts offered by the new departure advocates—and they are facts: If gold is applied in every case *perfectly*, if every particle of decomposed or half decomposed or softened dentine is removed, the enamel properly or *perfectly* trimmed to a hard *perfect* level, and the cavity stopped *perfectly* with gold—in a manner that accords with the ideal gold filling—so that a strong magnifier or a microscope would fail to detect an imperfection, *gold will preserve teeth perfectly*, and the applying of gold in such a manner, the preparing of cavities in such a manner, is *thorough dentistry*. It is ideal dentistry; it is a goal to strive for; it is the target to aim at, and I should like to say that it is my firm conviction, after some years of labor and thought, no matter what I may have ever said or written before, that it would be much better for the profession, as a profession, and as individuals, to have our young men trained to appreciate the importance of this thoroughness from the beginning of their dental lives. Let them give their minds to this mechanical (I hope the term will not be offensive), this *great mechanical* attainment, and as they advance in ~~th' ill~~, in *patience*, in thought, in earnestness, in honesty, other things ~~tee~~ will be added unto them. So much for *thoroughness*. A German ~~wl~~neighbor of mine fills teeth *remarkably* well—in a very superior man-~~ad~~er—and his motto is: “Gut ish gut, aber besser ish besser.”

There is, however, another side to this important question—the ~~abl~~ession of the day—and that is, the *Comfortable Dentistry* offered by the ~~wh~~ new Departurists. When we cannot reach or approximate the ideal—~~stu~~ur standard—on account of an inability in ourselves (for we must be ~~by~~ to the standard ourselves in mind and body to do what we *should*), ~~r~~ on account of disease in our patients (for our patients should be up to a ~~etty~~ good standard of nerve power, of courage, of endurance, of ~~itience~~, to be in condition to receive the *best* service, mechanically speaking), or on account of the condition of the tooth or mouth in which we tend to operate, we *should*, not we *may*, but we *should* know how to accomplish and to believe in comfortable dentistry as offered by the new departure. For a ball of red guttapercha, slightly warmed, plugged into a ~~partially~~ dried and partially cleaned, but well disinfected cavity of decay, is ~~“~~ir, far better than extraction or pain, or an open festering sink hole in a tooth; and thousands of patients can bear this and can be nursed along, so

to speak, with comfortable dentistry, where thorough dentistry would drive them to the *gas men* after one sitting. This is true in Europe; it is true in America; it is true among the members of our own profession, for many are as timid as their patients when about to be operated upon. This comfortable dentistry is not incompatible with *thoroughness* when proper, if the dentist himself is true to himself. It is not incompatible with the object of the profession to save the organs of the mouth from utter destruction. That it is not perfect work no one will deny. That it is compatible with the objects of a grand profession I am ready to believe. There are cases in the practice of the physician and surgeon where an alleviation of suffering, or a prolongation of life comfortably is all that can be expected, and the physician is pleased and satisfied when he can accomplish either of these objects. He knows that a *cure*, or the inspiring his sick patient with *perfect health*, is beyond his power. And we have thousands of such cases. Where the possibility exists let us urge the *thoroughness* above mentioned, and let us train ourselves and our students that *we* may be able to do what we *should* in these cases; but let us save teeth, by any temporary dressing, by any compound easily applied, by any means offered in any comfortable way we can. Somebody has said we must fill teeth with brains; and the longer we practice, the oftener we study our records of operations, the oftener we see our failures, and know of our struggles, the more we think about and strive in the apparently simple mechanical operations of our calling, the more we feel how much *brains* a dentist should have. And do we not, sometimes, think that the same devotion and work and thought in other callings might have reaped for us a far better harvest of cakes and ale?

SUPPLEMENT TO THE NEW JERSEY STATE DENTAL LAW¹

A SUPPLEMENT to an act entitled, "An act to regulate the practice of dentistry, and to protect the people against empiricism in relation thereto, in the State of New Jersey," approved March fourteenth, one thousand eight hundred and seventy-three.

"1. BE IT ENACTED by the Senate and General Assembly of the State of New Jersey, that the first Section of the Act to which this is a supplement, which section reads as follows:

"1. BE IT ENACTED by the Senate and General Assembly of the State of New Jersey, That from and after the passage of this act it shall be unlawful for any person to engage in the practice of dentistry in the State of New Jersey, unless said person has graduated and received a diploma

from the faculty of a dental college, chartered under the authority of some one of the United States or foreign governments, or shall have obtained a certificate from a board of dentists, duly authorized and appointed by this act to issue such certificates," be amended to read as follows:

1. BE IT ENACTED by the Senate and General Assembly of the State of New Jersey, That from and after the passage of this act, it shall be unlawful for any person to engage in the practice of dentistry in the State of New Jersey, unless said person has pursued a regular course of instruction for at least one year in a reputable dental college, chartered under the authority of some one of the United States or foreign governments, and has graduated and received a diploma from such college, or unless the said person shall have obtained a certificate from a board of dentists duly authorized and appointed by this act to issue such certificates, and shall have registered his name, and the name of the said dental college, or board of dentists, in the county clerk's office of the county in which he shall have engaged in the practice of dentistry, within one month after commencing such practice, in a book to be provided and kept for that purpose, in the several county clerk's offices of the several counties of this State, and for which registry the said county clerk shall be entitled to demand and receive from each person registering the sum of fifty cents, and any person violating any of the provisions of this act shall be liable to the penalties prescribed in the sixth section of the act to which this is a supplement.

2. *And be it enacted*, That this act shall take effect immediately.

by
at Passed February 10th, 1880.

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19th ANNUAL SESSION

OF THE

AMERICAN DENTAL ASSOCIATION.

HELD AT NIAGARA FALLS, AUG. 5TH, 6TH, 7TH AND 8TH, 1879.

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3d DAY—MORNING SESSION.—(CONTINUED.)

The Third Section, "Dental Literature and Nomenclature," was then declared open, and

DR. ATKINSON discussed the report on "Nomenclature and Terminology," which he had read the evening before. Discrimination is the

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first requisite in the discussion of a subject. An idea always presents itself in an unpronounced light,—its shadowy, ideal, theoretical aspect at first. Words have been used indiscriminately, almost universally, and with such admixture, and alternate transposition as to have befogged the whole field of philosophers up to this time; so that two sides could be taken upon any question that could be presented. In the hope of arriving at the basis of fundamental psychic activity, the committee has labored arduously, and, permit me to say, successfully. The efforts of the section were directed, as I have just stated, towards getting at the foundation. All past efforts have resulted only in the adoption of something as a substitute for *the* foundation. If I can have the attention of the sharpest minds in the body, I shall be obliged. Sound is the basis of all communication by speech. Sound that is produced by the human apparatus has nine distinct embodiments. Besides these, there are twenty-four inarticulate sounds, or stops to articulation. Those who have studied short-hand will be better able to comprehend the discriminations made than those who have paid no attention to divisions of sound in spelling and pronunciation. In the analyzation of sound we must have a starting-point, and that starting-point is called the atom. If you will now follow me, I will endeavor to explain the evolution of sound by the diagram which I have had placed upon the black-board. This first very thin light dot, represents the point—an unpronounced atom, which has neither length, breadth or thickness, and represents mere position in space. This is followed by the atom, the least pronounced portion of matter, as a concept. Next in order is the molecule, an unseen flock or collection of points. This in turn is followed by the granule, the first visible body under the lens. We then have the unpronounced corpuscle, indicated by a nucleated flock of thin and light granules. We then come to the next figure, which is simply the last one increased so as to be represented in a more distinct and palpable form—a nucleated flock of heavy granules, and is denominated the pronounced corpuscle. Dr. Atkinson thus explained the entire series consisting of seven steps, each step having two divisions. He also called attention to the fact that in the terminology represented, advancing complexity of organization was accompanied by increasing difficulty of pronunciation. He also returned thanks to the members of the society for the attention with which the report, read the previous evening, and his subsequent remarks, had been received.

Dr. H. A. SMITH, Chairman of the Committee appointed to prepare Resolutions on the death of Dr. McQuillen, reported as follows :

The father of this body has been called from labor to rest. Although we cannot see him by the use of our outward eyes at present among us, beholding our good behavior, rejoicing in our progress,—nevertheless he doubtless is still with us in spirit and purpose to assist in accomplishing the completion of the work so wisely begun by him while yet in the flesh among us. We mourn for ourselves in being deprived of his wise counsels and co-operation ; but we rejoice for him in that he is no longer amenable to the sorrows of misunderstanding and mental difference. May we all emulate his example of untiring effort for the upbuilding of our knowledge and efficiency in the great work for which this body was instituted. Though out of sight we feel him near to us all in harmonious fellowship in our work.

H. A. SMITH,
W. H. ATKINSON,
M. S. DEAN,

Committee.

Dr. F. H. REHWINKEL : I simply want to say that it is an evidence of the good and kind feeling, and of the appreciation of the members of the committee in the phraseology of their report. It is eloquent and beautiful, and I don't know anything can be added to it. I want to say just two or three words. Anyone who has known our departed colleague will know what a loss the dental profession has sustained. Those who had the honor to be called friends by him will feel their bereavement to such an extent that language fails to express it. There was one touching line in the report in which it is said that what is our loss is his gain; that he is now relieved from all the misunderstandings, and from all the strife of life. You will know that an effort has been made among the dental profession to provide a testimonial for his widow. I have been engaged as one in that endeavor, and I cannot tell you how painful and humiliating it must have been to those members of the committee who have been obliged to listen to the various slanders, and charges that have been made as an excuse for not opening the pocket and giving a dollar. I don't know any better moment than the present to denounce this action. I don't think, Mr. President, that there are many men in the dental profession like Dr. McQuillen, that there are very few his equal, and still fewer his superior, and I think we cannot express our sentiments and our appreciation of his merits and good man dental qualities in too strong and eloquent terms.

Dr. C. W. SPAULDING: It is always pleasant to contemplate a friend, and it is doubly so when we are brought face to face with the fact that our friend is dead. Dr. McQuillen was one of the founders, if not the founder, of this association ; and I believe we detract nothing from the just merits of any other member living or dead when we say that no one has labored more earnestly in bringing this association to its present condition of usefulness. Now that he is absent we can all the more readily estimate the value of his presence. Now that we shall see him no more we can all the more fully appreciate the worth of the work he has done. His place with us is henceforth vacant ; we shall see him no more. But though he is absent in the body, may he not be present in spirit? May not his strong love for this association cause him to draw near to us at this time? Indeed I almost feel that the words to which I am giving utterance are suggested by his friendly presence. But he has gone from this life. He has launched his bark upon that mysterious sea whose waves have never reflected the image of a returning sail. He has gone to that "undiscovered country from whose bourne no traveler returns." I almost feel that when I take my seat he will rise and say : "My friend from St. Louis is too partial in his praise. I have only done my duty." But this separation that has taken place is only for a short interval ; ere long we shall meet him again.

Dr. STELLWAGEN: Intimately associated as I was with Dr. McQuillen, from my very commencement almost in the study of dentistry, I suppose it would be my place here, under ordinary circumstances, and where ordinary attachments had been formed, to speak. I took occasion, however, during his life to show as far as I was able, my appreciation of his work. I took occasion during his life to be worthy, as far as I was able, of his friendship, and think, now that he has passed from our immediate physical perception, it is unnecessary to say anything more. One of the proudest moments of my life was when I read an anonymous attack upon myself, charging me with reflecting his views. If my anonymous friend spoke the truth, he spoke that of which I am prouder than anything else he could have said. Dr. McQuillen was the most devoted, earnest, workman in his profession that I suppose we ever have had. I don't think that anyone has ever excelled him.

Dr. BECK: I cannot, Mr. President, allow myself to sit still and hear so much good spoken of my dear friend, Dr. McQuillen, without adding my testimony to his merits. I claim that I knew him better and longer than any gentleman in this room. Dr. McQuillen and I were students

together. We came together hand to hand in the office of Dr. J. B. White, of Philadelphia. I merely rise to say I loved Dr. McQuillen and I loved his family, and I wish to say of Dr. McQuillen that I never met a nobler-hearted man: he had the warmest heart that ever beat in the breast of a human being. His house was always open, and I was always welcome. I always found him a gentleman of honor, and one upon whose word you could depend; and I think a gentleman who has done much for the dental profession. I assure you I appreciate all that has been said by the gentlemen who have preceded me, and I feel that this society cannot do too great honor to our deceased brother.

**Extract from the Published Proceedings of the Brooklyn
Anatomical and Surgical Club.**

Special Meeting, September 1st, 1879.

SARCOMA OF UPPER JAW—OPERATION.

Dr. Francis H. Stewart presented the specimen and showed the patient, of which the following is the history:

Mrs. M., age 60, born in England; was first seen July 25th, 1879.



FIG. 1.—SARCOMA OF HARD PALATE.

About a month before, she first noticed that biting with upper incisor teeth caused pain. Soon after she noticed some swelling of the gums

about the two middle incisors. They began to be separated as the swelling increased. She also noticed a small tumor on the roof of the mouth, a little to the right of the median line, close behind the teeth. It was then about the size of a pea. It was not tender, nor did it bleed. When first seen there presented what is shown in Fig. 1, which represents the exact size and the relation of the parts, being a reproduction of the cast taken before the operation. The tumor was sessile, with a slight constriction about the base at the posterior part, as is seen in Fig. 2, which represents a section made through the middle of the specimen after the operation. In these two figures the separation of the middle inci-

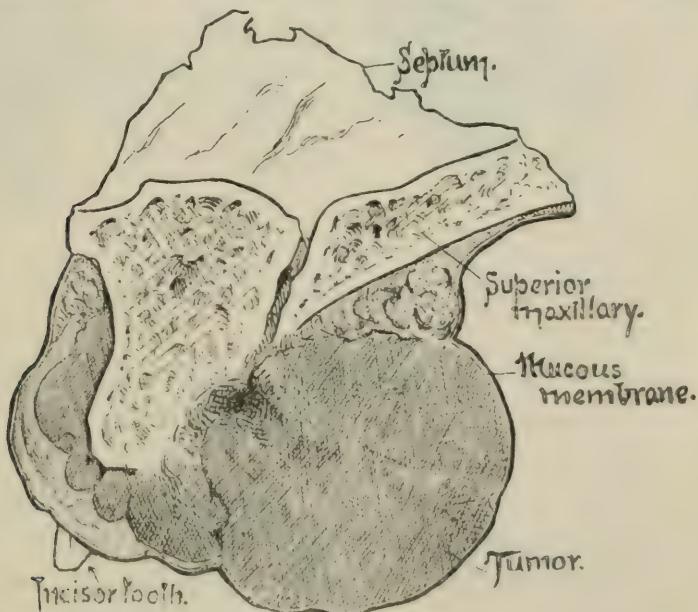


FIG. 2.—LONGITUDINAL SECTION OF SARCOMA OF HARD PALATE.

sors, the swelling about the teeth, both in front of and behind the teeth and the point upon the superior maxillary bone whence the tumor developed, are admirably shown. I am indebted to Mr. R. L. Dickinson, a medical student, for the drawings from which these cuts were made.

The tumor was denuded of epithelium, and was covered with a dirty-looking exudation. It was soft, pulpy to feel. It was not painful nor sensitive. The teeth were all loose. Speech was quite indistinct and mastication was much interfered with. The patient was in good general health.

The operation for removal was performed July 28th. There were present Drs. Ayers, Clarke, Skene and Wright, and Dr. Fry, dentist. It was performed in the following manner: The upper lip was lifted up, and

with a scalpel passed under it, was freed from its attachment to the bone up to the floor of the nose. Then with a finger-saw the wedge-shaped portion of the roof of the mouth, including all of the diseased tissue as shown by the lines in Fig. 1, was sawn through. Next the nasal spine and vomer were cut by bone pliers. In this simple manner the entire diseased portion was easily removed. There was slight hemorrhage from a small artery in the bone on either side. This was readily controlled by styptic cotton held in place by a wedge-shaped piece of cork, which was removed the same evening. The only after-treatment was washing out the mouth with a solution of salicylic acid in lime-water.

There being no external incision, the deformity was very slight. The patient is now in good health. The roof of the mouth is re-forming, and she will soon be able to have a plate with teeth fitted.

GEORGE R. FOWLER, *Secretary.*

FISTULA OF THE PAROTID GLAND.

BY G. S. SHATTUCK, D.D.S.

MR. PRESIDENT, —

Gentlemen : We, as practical dentists, have a great variety of subjects which command our attention and consideration. Pathological conditions are ever arising which affect the well being of the organs which we, in the practice of our specialty, are called on to treat. The direct or reflex action of nearly all the diseases the human family is heir to, cause more or less disturbance with the teeth and their associate parts.

An impingement of a nerve remote from the teeth may cause neuralgia, and useful teeth be sacrificed if the dentist does not understand the intricate arrangement of the nervous system. Female diseases have their effect on the teeth and oral secretions. Diseases of childhood, such as rickets, etc., generally result in imperfectly developed and irregular teeth. All of these diseases come more or less under the observation of the dentist in his daily practice, and we should be prepared to properly diagnose the causes and treat the effect. It is the duty of the dentist to look after his patients' physical condition while treating and performing operations on their teeth, and administer such systemic remedies as the case may demand.

Oral surgery is so closely allied with operative dentistry as to come more properly under the dental surgeon's care than either the general surgeon or physician. The oral cavity and associate parts present quite a field for surgical operations, and the branch of oral surgery should be

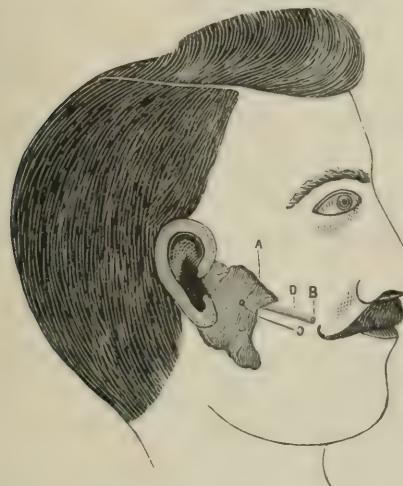


FIGURE 1.

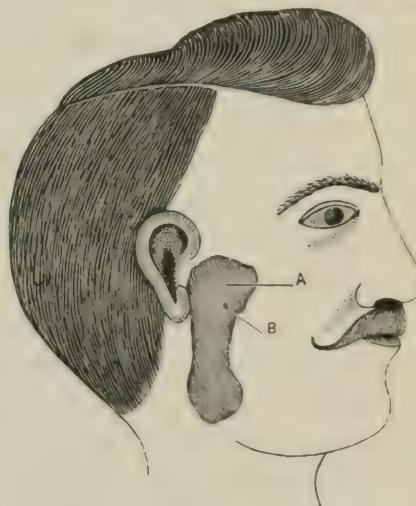


FIGURE 2.

more thoroughly taught in our dental colleges. Every dentist should be familiar with operations for hare lip and cleft palate. Necrosis of the jaws often require surgery in its treatment, and the dentist should be prepared to operate successfully. In cases of fracture of the jaws, the dentist's knowledge of making and adjusting plate gives him a great advantage in making and adjusting splint. The salivary glands are subject to abscess, especially the parotid. The constitutional condition most likely to favor it is an inflammatory or scrofulous diathesis. When abscess of this gland does occur, it often discharges its product through the cheek or side of the face, causing a permanent fistulous opening for the escape of the saliva, and is a source of great annoyance to the patient. And, as it is a case of this kind in which this paper is mostly concerned, let us before beginning examine the location and anatomy of the parotid gland. We find the parotid gland (fig. 1) (so-called from being situated near the ear), the largest of the salivary glands, varying in weight from one-half to one ounce. It is located on the side of the face, immediately below and in front of the external ear, occupying a variable space over the masseter muscle. Posteriorly it is bounded by the meatus of the ear, mastoid process and the sterno-mastoid and digastric muscles. Its outer surface is lobulated and is covered with integument and fascia.

It has an upper portion, sometimes detached, called *socia parotids* (A, fig. 1). It empties its secretions into the mouth by Steno's (B, fig. 1) duct, which is about two inches in length, which commences on the inner surface of the cheek by a small orifice opposite the second molar of the upper jaw. Running obliquely for a short distance beneath the mucous membrane, it pierces the buccinator muscle, then crosses the masseter to the anterior border of the gland, in the substance of which it subdivides into numerous branches. In crossing the masseter it receives the duct of the *socia parotids*. The parotid gland derives its arteries from the external carotid and its branches, its nerves from the carotid plexus of the sympathetic, the facial, superficial, temporal and great auricular nerves.

This brings me to the case under consideration. I do not wish to be understood that I deem the mode of operation and subsequent treatment anything new or the best that could be pursued, but this much I will say, it was entirely successful.

Mr. H. C. Hadstate, photographer, age 24 years; nervous bilious temperament, scrofulous diatheases. When 12 years of age, while skating, broke through the ice, and becoming thoroughly wet, took a severe cold, which resulted in an abscess of the left parotid gland, which broke and discharged its contents externally through the cheek, leaving the fistulous opening through which the saliva was discharged daily (B, fig. 2). The amount discharged was immediately increased just before and during meals and while in company. Even the thoughts of going out to supper or an evening's entertainment would start the flow, and was a source of great annoyance and embarrassment.

When he applied for treatment Oct. 12, 1878, the case presented the following conditions: Externally, a large eschar or cicatrix and callous surface extending from the zygoma on a line of the deep portion of the masseter muscle to the angle of the lower jaw, and of about $1\frac{1}{4}$ -inch in width at the upper end, growing narrower at the angle. A (fig. 2.) The fistulous opening was very minute (requiring a magnifying glass to discover it,) and was located just at the anterior border of the gland, near the junction of Steno's duct. B (fig. 2.) Internally the orifice of the duct was found in a normal condition, but on inserting a small, blunt probe, it could not be passed but about $\frac{1}{2}$ inch. D (fig. 1.) And it was ascertained that the duct had been obliterated the remainder of its length. On wiping the mouth out and drying the buccal cavity with spunk, and then touching the tongue

with acetic acid, the saliva was found to flow freely from the fistulous opening, while the orifice of the duct was perfectly dry. This experiment proves by actual demonstration the alternation in the action of the parotid glands, as when the acetic acid was first touched to the tongue there was no flow from the left, but the mouth immediately filled with saliva from the right parotid duct, and on the second application of the acid the flow was profuse through the fistulous opening, while the mouth of the duct on the right side was dry. After ascertaining that the left duct was stopped, an attempt was made to open up communication by dilating it, and for this purpose a small probe with blunt point was introduced three times a day, followed by injection of tepid water from a hyperdermic syringe, with blunt point, forced in to the orifice of the duct, with all the force of the instrument; but all to no effect. So great had been the inflammation and so deep-seated had been the abscess, that in healing, a portion of the duct was involved in the cicatrix and was left in a hardened condition, something near the texture of sinew or cartilage. On the first of November, I operated to form a new canal or opening into the mouth. The operation consisted in passing a seton from the orifice of the fistulous opening, (C fig. 1,) as near as possible on the line of the original duct into the mouth. The instrument selected for this purpose was a long and quite large needle known as a milliner's needle, and was threaded with ordinary sewing silk. The operation was completed with little or no pain, and no hemorrhage whatever. The needle was adjusted to a nerve broach holder and pushed through by the right hand, while the index finger of the left was held against the orifice of the obliterated duct to receive the point. But owing to the callous and hardened condition of the tissues, the needle was thrown off its course, passing into the fibers of the anterior portion of the masseter muscle, displacing some of them, came through into the mouth somewhat lower than was anticipated. The seton was then removed from the needle, brought out of the mouth and tied to the opposite end near the ear, and was moved daily. There was little or no trouble experienced for the first eight days, the saliva following the seton into the mouth, no flow on outside, the patient attending to business as usual, coming to the office every morning to have the seton moved.

Nov. 9. Patient's face presented an inflamed and swollen condition; experienced pain in opening the mouth and in moving the seton.

Nov. 10. Inflammation and swelling more extended, the muscles becoming rigid: put him under the influence of gas to move seton.

Nov. 11. Saw the patient at his room suffering considerably; inflammation increasing: mouth closing: applied poultice of flax-seed to his face.

Nov. 12. Found the patient confined to his bed; pulse 120; fever increasing; had a chill the evening previous; face swollen badly; jaws now closed: no food or medicine could be taken except in liquid form, through a tube inserted in a space left by missing incisor: gave gas as usual in removing seton: gave quinine in 5 gr. doses every three hours; morphia in $\frac{1}{2}$ gr. doses every hour until pain had subsided; continued the poultice.

Nov. 13. Found the patient in much the same condition; had slept some during the night; pulse about 125; moved the bowels by oil; patient little inclined to delirium; continued the quinine; discontinued the morphine except at night to produce sleep; continued the poultice.

Nov. 14. Found the patient somewhat better, pulse about 90, temperature lowering; continued the quinine and poultice; in moving the seton a quantity of pus was discharged from fistulous opening.

Nov. 15. Patient better, much improved, swelling of the face decreasing; pulse 80; fever subsiding; continued the quinine, now in 3 grain doses; continued the poultice.

Nov. 16. Patient much improved; jaws could be opened slightly; inflammation subsiding; able to sit up and take food; pulse natural; patient perspiring slightly; skin moist; on moving the seton a small quantity of pus and blood was discharged into the mouth; gave the patient good nutritious food, milk, custards, egg-nog, beef tea, etc.; gave the following prescription:

Quinine sulphas, xx gr.

Ferri sub carb. x gr.

Mix, divide into 7 pd. Dose, 1 every 3 hours.

Nov. 17. Patient able to sit up and take food quite freely; the swelling had subsided so that he could open the jaws considerably; discontinued the poultice and applied warm flannel dressings; slight discharge of pus on moving the seton.

Nov. 18. Patient much improved; swelling subsiding very fast; discontinued the quinine; more slight discharge on moving seton; still used the anæsthetic.

Nov. 19. Still on the mend; able to attend to ordinary business; had moved the seton himself without the gas.

Nov. 20. Patient thought he was able to commence work; had moved seton himself.

Nov. 22. Found patient in bed, face badly swollen, suffering severely. He had been at work printing pictures, which called him to an open window, and despite all the precautions of mufflers about the head and face, had taken cold.

Applied hot fermentations of hops and vinegar, put him on one-eighth gr. doses of morphine, kept poultices saturated with tinct. opium.

Nov. 23. Patient worse; inflammation increasing; face swollen so that left eye was entirely closed; suffering great pain; high fever; jaws tightly closed; expressed great anxiety about ankylosis and tetanus. Changed the hops and vinegar for flax-seed poultice, it being evident that there was an abscess forming despite all attempts to prevent; continued the morphia at night in one-eighth gr. doses, moving bowels every three days with oil.

Nov. 24. Patient about the same; slight fluctuation from pressure of the finger on the cheek, and unmistakable symptoms of erysipelas about the eye; saturated the poultice with tinct. opium, painted the part with iodine, continued the quinine and iron in 3 gr. doses.

Nov. 25. Abscess broke and pus discharged through the external opening on the cheek; patient became easier immediately, and jaws could be opened some without much pain; symptoms of erysipelas subsided.

Nov. 26. Patient much better; and from this date on continued to improve very rapidly. During the stages of high inflammation the saliva flowed through the external opening, but as soon as the inflammation subsided it flowed into the mouth, following the seton.

The patient was put on nutritious food and tonics. The muscles were lubricated by liniments and oils, and well rubbed with the hand. Under this treatment the muscle soon relaxed so that the jaws could be opened nearly as wide as ever, and patient could use the jaws in mastication.

Dec. 4. Removed seton and closed external opening temporarily with collodion dressing, the saliva passing readily into the mouth. This dressing was renewed every second day, and the orifice of external opening (which had become quite large during the inflamed stages), closed very rapid. On the fourth day of January a heated point of a broken plugger cauterized the small opening left, which caused a scab to form, under which it entirely healed and closed up, and patient was pronounced cured and case discharged.

RESULT OF OPERATION.

1. An increase in weight of 18 pounds.

2. Before the operation patient was obliged to wear a close-fitting jacket or corset for two or three hours after arising in the morning, on account of a disagreeable sensation in and about stomach. But after the operation there was no more use for the corset, as the disagreeable sensation above mentioned was entirely relieved.

3. Patient could go into society without annoyance and embarrassment.

DISCUSSION.

Dr. SHATTUCK : At the time the jaws were closed entirely, he was unable to open or move them, and he became so anxious about ankylosis that I called in one of the professors of the medical college. I was a little afraid he was going to die on my hands, and I think he was a little more afraid than I was. The professor told me that I was doing all that could be done in the case.

Dr. HAWXHURST : I am very glad that the case has been reported as fully as it has been. It must have taken a considerable amount of industry to get together the facts in the case and put them in shape for reading. I think it is very desirable that dentists should take hold of these cases and others of like character, and treat and bring them to a successful issue. A new day is coming for dentistry, when practitioners will include in their domain all the surgery of the face and the sympathetic relations of the diseases which they treat; and of course we are glad of any beginnings that may be made. I would ask Dr. Shattuck how many days the poultice was continued?

Dr. SHATTUCK : The object of the poultice was to keep down inflammation as much as possible, and while the poultice was on it was much easier; the pain was a great deal less. The poultice was used more to keep down the inflammation than anything else; and when the abscess was forming the hops and vinegar were put on in the hope of avoiding it, but it was all to no purpose; the abscess would form.

Dr. HAWXHURST : In what tissue did the abscess form?

Dr. SHATTUCK : It seemed to be in the posterior part of the masseter muscle.

Dr. HAWXHURST : It was not in the gland?

Dr. SHATTUCK : No, not entirely, but involving a portion of it. There was fear at the time that it might form another opening at the lower part of the gland, or probably down in the old scar, and instead of having

one fistulous opening to heal up I would have two, but fortunately it broke in the old fistulous opening.

Dr. JACKSON: Did you think that perforating the masseter muscle caused this?

Dr. SHATTUCK: Yes, perforating and displacing the fibers: in fact, immediately after the operation the jaw could not be used as well as before, from the fact that it was going through the masseter muscle. The steno duct passes over the masseter muscle and pierces the buccinator, and in passing the needle in it was driven out of the course intended it should take and went through the masseter muscle, and of course displaced some of the fibers. If I should operate on another case I should use a silver seton. The one I used I think let in poison from the mouth and became saturated with the oral secretions, whereas a silver seton would carry nothing of the kind in. It was not deemed very essential to make the saliva follow the seton. The old duct being obliterated, the operation was to form a new duct. The saliva flowed over the outside during the active stage of the inflammation, which probably in any other constitution would not have run so high: in a more robust constitution it might have been very slight. The object was to form a new opening in the mouth for the gland to discharge its secretion into the mouth, instead of discharging outside of the face. For twelve years he had been troubled with saliva pouring out on his collar and vest while in company: sometimes even the thought of going into company would produce it.

Cases of fistula of the parotid gland are rare. I never saw a case before in a human subject. I saw one in a dog, which was a source of a good deal of annoyance to him, but never in a human subject: and I deliberated quite a while before I determined to operate upon it; but the man had confidence in me and urged me to proceed. I spoke to Prof. Taft when he was in Detroit, when the case was in a high state of inflammation: I had grave doubts about ankylosis of the jaw: Prof. Taft said he did not think it would occur. I also wrote to Prof. McLean about it, and his reply was that there was no danger of ankylosis; there was lateral motion of the jaw, even if the teeth were closed. But when the relapse came on I was considerably discouraged: I thought many times of taking the seton out and letting it go, but then I thought as we were about through the worst part of it, I would go on. The cicatrix or scar of the original fistula is very large.

PHILADELPHIA DENTAL COLLEGE.

The Seventeenth Annual Commencement of the Philadelphia Dental College was celebrated at the Academy of Music, Philadelphia, Pa., Friday evening, February 27th, 1880.

On every hand we hear that the exercises of this commencement were exceptionally brilliant and well conducted, and that Dr. Smith's address to the graduating class was a gem. A listener says, "The best ever heard on such an occasion." Prizes, well earned, were happily bestowed, but we have not at hand a list of the recipients, and as this is the last item set in type, and all is waiting for the final "make up," we have not time to secure it.

The degrees were conferred by ex-Gov. Pollock. The valedictorian of the class was Wm. J. Bowden, D. D. S.

The following is a list of the graduates :

Napoleon B. Avery,	Oregon.	Alfred Hosfeld,	Penn.
William J. Bowden,	Ireland.	Harvey Iredell,	N. J.
Jacob S. Brandt,	Penn.	Albert H. Lewis,	Penn.
Winslow L. Church,	R. I.	Wm. H. Marshall,	Miss.
Edward G. Clark,	Oregon.	Milton C. Marshall,	Miss.
William E. Davie,	N. J.	J. Clyde Macartney,	Penn.
Fred I. Drowne,	Mass.	Chas. W. McConnell,	R. I.
Ferdinand Egger,	Germany.	W. Addison McKelvy,	Penn.
James A. Finney,	Penn.	Morton R. Metcalf,	Minn.
Clarence E. Gates,	Mass.	Sam A. Milton,	Mo.
S. Eldred Gilbert,	Penn.	Charles A. Page,	Penn.
Oscar J. Gross,	N. Hamp.	Walter Peake,	Eng.
Alvin C. Harding,	N. Scotia.	Fred M. Smith,	N. Y.
John A. Hartmann,	Penn.	S. Goode Thomson,	S. C.
John V. Hemstreet,	N. Y.	Edwin R. Varcoe,	N. Y.
Reuben Herrod,	Penn.	William R. Webb,	Penn.

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY,
OF GREAT BRITAIN:

ANNUAL GENERAL MEETING, Monday, Jan. 12th, 1880.

EDWIN SAUNDERS, Esq., President in the Chair.

The Minutes of the previous meeting having been read and confirmed,

The vote by ballot for the election of the Executive Officers for the year was at once proceeded with, and Messrs. Gaddes and Forsyth were chosen to act as Scrutineers.

The following gentlemen signed the Obligation Book and were formally admitted to membership by the President :

Messrs. George Parkinson, Thos. A. Roberts and W. H. Woodruffe.

The President announced that the following candidates had been duly nominated and would be balloted for at a subsequent meeting, viz. :

Messrs. W. A. Maggs, 12 Albert Street, Regent's Park ; Geo. Pedley, High Street, Borough ; Fredk. Joseph Bennett, George Street, Hanover Square ; Arthur Taylor, Leeds ; Chas. Tamworth, Otford Street, Manchester.

The Secretary then read a communication from Mr. W. H. Skeet, of Omara, New Zealand, and handed the model to the President which accompanied the communication. It referred to a case of absorption of the upper jaw, due to the pressure of a pad of cotton-wool. A lady, aged fifty-five, just before leaving England, about three years ago, had an artificial denture fitted, supporting the central canines and bicuspid teeth, the denture clasped to the first molars, her only remaining teeth. As it was rather loose, a pad of cotton-wool was used to tighten it. This answered very well for some time, but about October, 1877, it was found necessary to increase the size of the pad every few days, and at last, in March, 1878, the unsteadiness of the plate compelled her to seek advice from Mr. Skeet. She stated that she had had a plate fitted about twelve years previously, supporting almost the same number of teeth, but before leaving for New Zealand she was advised to have a few remaining stumps extracted and a new piece made. This was accordingly done, with the result mentioned above. In the lower jaw there was nothing unusual ; the six central teeth alone remained and some bicuspid stumps. None of the other teeth had been lost by absorption: all had been extracted. In the upper jaw there were, when the patient was first seen, two molars, but one was much decayed and had since broken off; the remaining one was still quite firm, although the fangs were much exposed, the palatine almost to its apex.

Mr. HUTCHINSON also read a communication from Mr. Percy May relating to the retention of the lower temporary molars and canines in a patient aged nineteen, and exhibited models of the mouth. There was no sign of the permanent canines or bicuspids in the lower jaw. In the upper, the temporary canines were still in place when the patient

was first seen, but as there was a slight appearance of the left permanent canine, Mr. May removed the temporary tooth on that side, leaving the other.

Mr. R. H. WOODHOUSE showed the skull of a native of New Caledonia, which had been sent as a contribution to the museum by Mr. Redding, of Sidney, N. S. Wales. The inhabitants of this island belonged to the Papuan race, a branch of the Negro family. Unfortunately some of the teeth had dropped out on the voyage and had been lost, but the upper wisdom-teeth were remarkable exceptions to the rule to which Professor Fowler had called attention at the last meeting. That on the right side was very imperfect, resembling a temporary canine more than anything else ; the left wisdom-tooth was also imperfectly developed and was crowded out of position. He also presented a lower jaw, which had belonged to a Maori (native of New Zealand), which was only remarkable as being a typical specimen of what a lower jaw ought to be.

Mr. CLAUDE ROGERS then related the following case : On the 23d ult., a man came to him at the hospital complaining that a lower plate which he was wearing, had become so fixed that he could not remove it. The patient was an Hungarian, aged fifty-eight, a teacher of languages. He had previously applied to a dentist, but without obtaining relief. The plate, of gold, had been made ten years back ; about three years ago he began to find a difficulty in removing it, and for the last fifteen months it had not been out of his mouth.

On examination, Mr. Rogers found considerable swelling of the right side of the face, and a fistulous opening under the lower jaw on that side, through which a portion of the gold frame protruded. On looking into the mouth, the body of the plate could be seen bridging across from one side to the other, but both ends were deeply imbedded in the mucous membrane of the mouth, and held firmly by tough fibrous tissue. The piece was removed with some little difficulty by the aid of the knife, together with a considerable amount of upward traction. It was then discovered that the jawbone had been completely divided, owing to the absorption which had been caused by the pressure of the strong spiral springs, by which the plate had been held in place ; a large V-shaped gap had been made on the right side, into which a portion of the sublingual salivary gland protruded. On the left side the perforation of the bone was not quite complete, but a deep depression had been formed. The patient said he had suffered little or no pain. The edges

of the fistulous opening were well cauterized with nitrate of silver ; it soon began to contract, and on January 9th was found to be closed. The gap in the bone would probably, in time, become filled up by cicatrical fibrous tissue. Mr. Rogers added that he had never heard of a precisely similar case, and had, therefore, thought it worth relating. He handed round the plate for inspection. The patient was still attending the hospital and could be seen by any one who might be interested in the case.

Mr. J. S. TURNER asked whether the articulation of the plate was not altered.

Mr. CHARLES TOMES asked in what situation the bone was divided.

Mr. CLAUDE ROGERS answered that the bone was cut through near the mental foramen on the right side. The articulation of the piece was but slightly affected.

The President called attention to an improved dental chair, made by Mr. White, of Philadelphia, which had been sent for exhibition.

Mr. HUTCHINSON said he had had an opportunity of examining the chair when he was in Philadelphia last year, and would do his best to point out its advantages over the previous works of the same maker. The chief improvement was in the back, which could be adjusted to any angle, and was so freely movable in all directions that the chair could be made to hold comfortably either a small child, a well-grown adult, or even a humpback. By lifting the backpiece slightly it would be made to support the patient's back firmly, whilst at the same time a space was left below to receive the voluminous folds of a lady's dress.

Mr. S. J. HUTCHINSON said that some time back the curator had requested members, when they had regulation cases under their care, to send him a series of casts illustrating the progress of the case at different stages of treatment, together with the plates that had been used. He had accordingly brought a plate and four models—three of the upper and one of the lower jaw—showing the results of treatment in a case which he had lately brought to a satisfactory termination. Between the taking of the second and third models a period of three months had elapsed, during which the patient was not once seen. The patient was a young lady, fourteen years of age ; the teeth were therefore tolerably firm in their sockets. Knowing that he should only be able to see the patient at long intervals of time, Mr. Hutchinson had been very careful to cut away the plate behind the projecting teeth only just sufficiently to enable them to go back into their proper position.

Mr. ASHLEY BARRETT asked whether Mr. Hutchinson thought the improvement would be permanent. His own experience was that although it was not difficult to draw the teeth into line, it was very difficult to keep them so, since the lower teeth tended to push them out again.

The President asked Mr. Hutchinson how long he thought the patient ought to wear the plate in such cases in order to make sure of securing a lasting result.

Dr. FIELD remarked that in most cases where the upper teeth projected, it would be found that the lower teeth, having no opponents to bite against, were unduly high in their sockets, and if, under these circumstances, the upper teeth were drawn back they were soon forced out again by the hard blows of the lower. In such cases he was accustomed to commence the treatment by fitting a plate to the upper jaw, so arranged that the lower teeth should bite upon it; by this means the tendency to elongation was checked, and the upper teeth might then be brought into line with much greater prospect of success.

Mr. HUTCHINSON answered that in his case there was an edge to edge bite, so that he had great hopes that the teeth would remain in their new position. But when the lower teeth bit on the backs of the upper, he agreed with Mr. Barrett that there was a great tendency to relapse, and that much patience and care were necessary to prevent this. As to the time required, he thought that in such cases as that which he had just related, it was sufficient if the patient wore the plate constantly for six months, and then for another six months during the night only, after this it might be advisable to wear it every second or third night for a short time longer. But if the bite was not edge to edge, a longer time would be necessary.

The President then called upon the Treasurer to report on the state of the Society's finances.

Mr. PARKINSON said he was happy to be able to report again, as he had already done for several years past, that the financial position of the Society was very satisfactory.

*Treasurer in Account with THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN,
for the Session ending 31st October, 1879.*

ASSETS OF THE SOCIETY, OCTOBER 31ST, 1879.		
Receipts, 31st October, 1879,	£490	12
Expenditure	386	19
Surplus over Expenditure	£103	13
Stock in New 3 per Cents.	8	
Cash at Bank, Interest and in Treasurer's Hands.	7	
	646	7
	£1,818	19
	11	

STATEMENT OF DEATHS, RESIGNATIONS, MEMBERSHIPS LAPSED, AND NEW MEMBERS ELECTED DURING THE SESSION 1878-9.

October 31st, 1879.

Number of Subscribing Members—Resident.....	112
" " " Non-resident.....	205
	—
TOTAL.....	317
	—
Number of Honorary Members.....	30
" Corresponding "	23
	—
TOTAL.....	53
	—
Deaths—Resident.....	1
Non-resident	1
Corresponding	1
	—
TOTAL.....	3
	—
Resignations—Resident.....	3
Non-resident	5
	—
TOTAL.....	8
	—
Members in arrear of payment at Audit, 22d December, 1879—	
Resident.....	11
Non-resident.....	36
	—
TOTAL.....	47
	—
New Members elected during session—	
Resident.....	7
Non-resident.....	17
	—
TOTAL.....	24
	—
New Corresponding Members.....	1

The President said the only fault he could find with the Treasurer's statement was that the Society was getting too rich.

Mr. WEST asked whether the sum set down for rent was not a larger sum than had appeared in previous balance-sheets.

The President answered that the Council had long felt that the amount they had paid as rent was a very inadequate return for the very excellent accommodation which they received.

Mr. PARKINSON stated, in reply to Mr. West's query, that when the Council had determined to discontinue the services of a paid Secretary, it was felt that this would be a good opportunity for giving the hospital a more liberal return for the shelter it afforded to the Society without at all increasing its expenditure. The rent had accordingly been increased from £50 to £80, and he still thought they were paying a smaller sum than might in strict justice be required of them. As to the evil which the President had called attention to, it was one which could be easily remedied and the account of the coming year would not show so large a balance. It was in contemplation, among other things, to spend a much larger sum in improving the museum.

Mr. WEISS said that he could report the Library to be in excellent order. All the books had been re-arranged and a new catalogue drawn up. About thirty new books had been added during the year and eighty-six had been borrowed. It was now the most perfect Dental Library in Great Britain, and he would take the opportunity of reminding the members of the great advantages it offered, both for instruction and especially for ready reference to rare and valuable works.

Mr. CHARLES TAMES reported that numerous contributions had been made to the museum during the past year. It had been made use of to a much greater extent than formerly, both by the students and also by the hospital staff, for the purpose of illustrating their lectures. But as this had led to some disarrangement of the specimens, the Council had appointed Messrs. Mayor and Willoughby Weiss to assist him in rearranging the specimens and in verifying the catalogue. It was also in contemplation to mount and arrange a number of additional specimens which had been kept for some time in reserve.

Mr. GADDES announced on behalf of the Scrutineers, that the list of Officers and Council for the year 1880, recommended by the present Council, had been elected.

PRESIDENT'S ADDRESS.

GENTLEMEN :—

The circling year has again brought round the point of time which reminds us that Presidents have "their exits and their entrances," and in the present case brings him who makes his exit face to face with that solemn word of dire import "nevermore." For, however difficult, or even presumptuous, it may be in ordinary cases to say what may or may not be in the future, or however deep may be the conviction of duties imperfectly discharged, or of opportunities let slip, it is certain that for him who now retires there is no space for reparation, whatever there may be for repentance. Whatever his shortcomings, there they must remain. For the rule of this Society is, and ever has been, that the President shall be elected annually, and although at the expiration of his term of office he may feel that he is only now beginning to understand his work, and would be in a better position to discharge its duties in a second than in the first year, yet no precedent can be quoted for such an innovation, much less for one who has a second time enjoyed that distinction. Whether that rule, which was at first adopted in view of the advancing years and failing powers of the earlier presidents, might not now be reconsidered, and the practice in this respect be assimilated to that which obtains in the Royal Medical and Chirurgical and some other Societies, may form a fit subject for consideration by the Council. It is one of those questions as to which there will always be, as there has always been, considerable divergence of opinion ; for while to some the stimulus and enthusiasm due to a novel experience may seem to give a zest to the Society's proceedings, and to be in favor of an annual election, to others these advantages may appear to be more than counterbalanced by a certain immaturity and indecision in the presidential conduct of affairs. On the whole, as an impartial observer who has had some experience of both systems, I venture to express my conviction (though I do so with all diffidence) that the balance of advantage lies with the two years' tenure of office. The number of meetings comprised in a single session is scarcely sufficient for the full comprehension and discussion of questions of importance, or even for the initiation of much needed reforms in the laws or management of the Society ; with the result either that they are imperfectly discussed and hastily but not permanently or satisfactorily settled, or are relegated by the retiring president to his successor, before whom they have to be re-opened and

argued afresh. I trust it need not be stated that these remarks are made entirely in the interests of the Society, and are suggested, not by my own, but rather by the experience of others who, for obvious reasons, may have shrunk from making the avowal. Nor, let me add, should I have ventured to touch upon the subject were it not for being beyond the pale, having already served the office for that second year which, coming in its natural sequence, and not separated by an interval, might appear to be advantageous. One, and a very conspicuous advantage, would certainly be, that the Society would be spared the infliction of two addresses—one inaugural and one valedictory—following so closely upon each other from the same person. When I last had the pleasure of addressing you from this place, I drew a very favorable augury for the future, from the character and attainments of the young members of our profession, who had not neglected the singular educational advantages of the present as compared with former time, and from their attitude towards, and attachment to, the Odontological Society. And, I think, all will admit that this confident ground of congratulation and expectancy has met with ample justification. If we look back through the year which has just passed, we shall see that it is to them and to their endeavors that the meetings mainly owe their interest. That it must be so if the Society is to maintain its life and vigor is obvious, but that these demands should have been so well and so promptly responded to, must afford great satisfaction to those who, from old association, feel themselves bound up in its welfare. In estimating the work of the session, two things must be borne in mind: the somewhat narrow limits of the field of work, and also that the Society, being no longer in its first youth, the field has been pretty thoroughly reaped and gleaned. But if we can point to no startling originality or self-evident improvement in science or practice, we have had a series of evenings pleasantly and profitably spent, and by no means barren of sound practical results. The discussions have been free and animated, opinions have been subjected to keen, but not unfriendly criticism, which has in no instance transcended that unwritten code of courtesy which every true gentleman obeys instinctively, even amid the heat and clash of opposing views. So that we need have been under no apprehension if our proceedings had been subjected to the critical eye of the intelligent foreigner* who has lately been favoring us with his impressions of our

* Dr. Hillebrand, *Contemporary Review* for October, 1879.

national characteristics, manners and customs, in no captious or unfriendly spirit. He would probably have acknowledged that Englishmen, while maintaining the courage of their opinions, are not forgetful of the amenities that belong to an advanced civilization, and even the more caustic critic of the House of Moliere* would be forced to admit that in debate we can hold our own, and agree to differ without those frantic demonstrations of violence which are not quite unknown in the metropolis of taste.

Probably the one characteristic feature of the session just passed, will be found to be the development of that section of our meetings which is included under the term "casual communications." Such communications, from their eminently practical character, having their origin for the most part in the daily work of the consulting room or of that larger sphere of observation afforded by the Dental Hospital, have always been popular, and seem, in their increasing number and importance, to be destined to attract a still larger share of attention. This, it is only fair to say, has been mainly due to the exertions of our excellent Secretary, Mr. Hutchinson, who is not only a notable contributor in this kind himself, but who seems to have a rare magnetic power of calling them forth from others. How many an ingenious contrivance or novel proceeding in treatment or in the method of conducting an operation originating in some emergency, and of considerable interest and value in practice, would be consigned to oblivion but for this part of our meetings. Or, again, how often has a new light been thrown on a case of difficulty, or the weak points of an ill-contrived apparatus made manifest by bringing the case before the Society in this ready and informal manner. For, with the scant leisure at his disposal, and the many inroads made upon that small portion of his time which a man can call his own, who is in the full tide of successful practice, he, not unnaturally, feels indisposed to compose a monograph or prepare an elaborate paper, although he may be conscious of possessing ideas or results of experience not without value in smoothing the path of practice for others. Nay, more, he may be gradually made aware that his power of concentrating his attention upon any given subject is impaired from a long course of these constant interruptions; and the inaptitude thus arising, together with exhausted energies, makes him abandon the attempt in sheer despair of accomplishing it with satisfaction and credit

* M. Sarcey.

to himself. And thus, if there were no such Society as this, and no such provision as it affords for these waifs and strays of thought, much valuable matter would be lost. Not the least among the advantages belonging to these casual communications, is the wide sympathy which they enlist, and the number of speakers they call up, as compared with the more elaborate and recondite papers. To this I must appeal in extenuation of a laxity in having on more than one occasion permitted the time allotted to this class of communications to be considerably exceeded. Being, however, strongly of opinion that whatever tends to render our meetings interesting should not be discouraged, I have been reluctant to enforce a strict interpretation of the law as to time. The occasions have been so recent, and are still so fresh in the recollection of those present, that it will be unnecessary (as it might be invidious) to particularize the subjects which have been from time to time brought under the notice of the Society. But there was one at an early period of the session, apart from its own intrinsic interest as a step in advance in what may be called conservative dental surgery, based on antiseptic treatment, which furnished so curious an illustration of a novel and growing feature of modern journalism that I am tempted to bestow on it a passing notice. The subject to which I refer is the replantation of teeth, a matter which has before engaged the attention of the Society, and which promises at no distant period to pass out of the domain of experiment and to take its place, within certain limitations as to age, temperament, alveolar integrity, &c., among accepted and recognized surgical proceedings. The revival of this subject at this time was due to the presentation of a memoir to the French Académie des Sciences by M. Magitot, giving a detailed account of a large number of cases treated by himself, and for the most part attended with more or less successful results. It is curious to observe how this "plain, unvarnished tale" became transformed in the hands of "our own correspondent," ever on the watch for things novel and wonderful—how the simple removal of teeth with partially necrosed roots and returning them after excision of the dead parts to the sockets to which they are adapted by nature, suddenly developed into the transplantation of teeth of other persons, or even of the inferior animals; nay, so fervid did his imagination become, that not having the fear of the anti-vivisectionists before his eyes, he proceeded to foreshadow a time when the present artificial arrangements shall become obsolete, and lost teeth shall be supplied by transplanting those of animals, which having taken root and become

established in artificially-created sockets, should be excised, and crowns resembling human teeth grafted on to the roots.

Although not believing for one moment that Dr. Magitot was responsible for this flight of imagination, yet as it had appeared in the leading journal I asked our indefatigable Secretary to get access, if possible, to the original memoir. For this purpose he placed himself in communication with Mr. Charles Tomes, who is never behindhand in bringing before the Society the latest results of scientific work, and the result of this application was the straightforward and highly-interesting epitome of Dr. Magitot's paper with which we were favored in March, the motto for which in reference to "our own correspondent" might have been, "Now mark how plain a tale shall put thee down." This, I think, is a very good example of a new phase of journalism, in which a half-truth hastily grasped forms a basis for a superstructure of the most fantastic and improbable character. On other evenings of the past session the attention of the Society has been claimed by Dr. Field on the ever-fresh and important subject of "Gold-fillings :" by Mr. David Hepburn on "Nicotine, and its effects on the teeth," as the result of habitual tobacco-smoking ; by Mr. Arthur Underwood on "The functions of the Nerves of Taste," and by Professor Flower in his most interesting "Notes on specimens of Abnormal Dentition in the Museum of the Royal College of Surgeons," which, with the valuable report on Plastic Fillings, presented by the sub-committee appointed in the year 1878, together with no inconsiderable number of casual communications, constitute the Society's contribution to odontology during the session of 1879.

Death has dealt leniently with the Society during the past year, though he has not left our ranks untouched. For though by an inexorable law, to which all associations of human beings alike must bow, he never fails to exact his tribute, yet we are not now called upon to mourn the loss of those who have occupied a prominent position in our midst, or who were endeared to us by long and close personal intercourse. Dr. McQuillen, of Philadelphia, whose sudden death under very distressful circumstances, occurred on March 3d, was a corresponding member of this Society. He was a zealous promoter of the literature, as well as of the educational institutions of the profession; more especially of the Philadelphia Dental College, and was for many years one of the editors of the *Dental Cosmos*. He was unsparing in his devotion to the interests of the profession, even to the extent of detri-

ment to his own personal and domestic affairs, so that his early death is in every sense an unmitigated calamity to his family. I am not aware that he ever carried out a frequently-expressed wish to visit this country, and he was therefore known to most of the members of this Society, excepting to those who had sufficient enterprise to cross the Atlantic, only by correspondence, which knowledge, however, I may state in my own case only quickened my desire for a closer acquaintance. The unhappy termination of so useful a life seems, as might have been expected, to have called forth the expression of a deep and general feeling of profound sympathy from his professional brethren throughout the Union. We have also to record the death, which took place in July last, of Mr. Patrick, of Southport, one of our non-resident members, and when in addition we have made mention of the decease of Mr. Walter John Woodman, a resident member, and of eight resignations of membership from various causes, we shall have exhausted the list of our losses. To counterbalance these, however, we are able to record a large accession of new members, so that the number on the roll of the Society at the present time is somewhat in excess of that at the corresponding period of last year, and I believe of that of any previous year.

Of events of interest to the profession, though not strictly belonging to the Society, there are not wanting some two or three which may not be passed over. One is the opening of the Edinburgh Dental Hospital and School under flattering auspices, foremost among which should be noted the election of a distinguished member of our own speciality to the position of Presidency of the Royal College of Surgeons of Edinburgh, a circumstance which is not only highly gratifying as a mark of personal appreciation exhibited towards one of our own body, but as a tardy abandonment of the long-existing hostility to special practice which is absolutely without parallel. Another important event is the publication by the General Medical Council of the first authoritative register of Dental Practitioners. This, which, notwithstanding its many imperfections, I regard as the most momentous event in the annals of the profession, giving value to and energizing all that was previously accomplished, I gladly leave in the able hands of my successor, who will doubtless treat it with all the fullness and ability which so important a subject demands. I will only observe that the publication of this Register appears to me to be the great triumph of specialism; and those only can appraise the magnitude of the task by which it was accom-

plished, who knew the repugnance felt to it on the part of those in authority, and the many and varied obstacles to be overcome. It is now, however, an accomplished fact, and it is not in the nature of Englishmen to let those who have unsparingly devoted their time and energies to the achievement of so great a boon, to which time will render an ever-increasing value, remain without recognition and reward. The formation of the British Dental Association must also be reckoned among the events which have signalized the year that has just passed. This necessary step to the organization of the profession, the scope and functions of which are as yet but imperfectly understood and defined, has a great future before it, as promoting a freer intercourse and a better *esprit de corps* both amongst town and country practitioners. As, however, this is also a subject which will doubtless be brought before the Society by the new President, I shall content myself with remarking on the difference in the scope and objects of the Association and of this Society, these being in the former political and mundane, as compared with the scientific and æsthetical character of the latter. It is scarcely necessary to say that there is not and cannot be any antagonism between the two institutions, the ground covered by each being radically and essentially different ; the Association taking cognizance of matters which do not fall within the scope of the Society, and being founded, in fact, for the most part, on the lines of the British Medical Association, which has, during many years, rendered signal service to the medical profession. Thus the British Dental Association, representing or embracing the great mass of legitimate practitioners, may fitly address itself to the by-no-means unimportant material interests of the profession, guarding in an especial manner the purity of the Register, and providing, by means of periodical conventions, by its Journal, and otherwise, for a perfect intercommunication among its members. On the other hand, the Society, ignoring the commercial element altogether, will continue to allure and enroll in its ranks those who regard the profession as something more than the means of making an income, and who seek to advance its status by histological research, by the elucidation of interesting biological problems, or improved processes for the relief of suffering humanity. And men of this stamp, and with such aspirations, though select rather than numerous, will never be wanting, willing and worthy to serve in the temple of knowledge, to trim and tend the golden lamp, or to kindle and keep alive the sacred fire that burns on the altar of experimental science ; who

are conscious of inward promptings to exclaim with the earnest-minded and philosophic Hamlet :—

“ What is a man
If his chief good and market of his time
Be but to feed and sleep? a beast, no more,—
Sure He that made us with such large discourse,
Looking before, and after, gave us not
That capability and God-like reason
To rust in us unused.”

They know by sweet experience that in using those divine capacities, and in exercising that God-like reason, is to be found the highest, the purest, and the most enduring happiness. With them it is an article of faith, that work is health—work is life; and recognizing the great law of interdependence, extending through “ all sorts and conditions of men,” and believing that each one has his allotted task for the good of the commonwealth of humanity, if he will discover it and “ do it with his might,” they are proof against *ennui*—that moral paralysis born of an aimless life; and to them the cynical question will never suggest itself. “ Is life worth living?” Nor will those who, from temperament, mental constitution, or absence of favoring circumstances, are precluded from attaining to these heights, be without compensation or reward; for the mere social contact with men of cultivated minds, besides stimulating the intellect, makes them more liberal and appreciative in their judgment of each other; and substituting a generous and enlightened altruism for the narrowness and ego-worship which are so apt to crystallize round the character of the specialist, adds the crowning grace of refined and gentle manners.

And now, in bidding you farewell, permit me to express my thanks to the Society for the honor it has conferred upon me in electing me a second time its President; to the Council for punctual attendance, support and advice; to the Treasurer as referee in matters of finance and statistics; to the Secretaries for zeal and energy in the conduct of the meetings; and last, but not least, to those my contemporaries who, by their presence and countenance, have gone far to roll back the encroachments of time, and to make me forget the inevitable years.

Mr. THOMAS ROGERS proposed a cordial vote of thanks to the retiring President for the patience and courtesy with which he had presided over the meetings of the Society.

This was seconded by Mr. UNDERWOOD, and carried unanimously.

On the motion of the PRESIDENT, the thanks of the Society were also given to the Treasurer, the Librarian, and to the Honorary Secretaries.

The meeting then terminated.

Chemical Examination of Dental Cements. Fletcher's Porcelain Cement.

In the report on Fletcher's Porcelain Cement which appeared in the November number of this journal, the above was incorrectly described as pyrophosphate of zinc only, omission being inadvertently made of pyrophosphate of aluminium.

The correct description of the cement according to the analysis should have been a substance composed of pyrophosphate of aluminium with pyrophosphate of zinc.

J. M. THOMSON.

Applications for Membership now under the consideration of the Council :—

Lawrence Reade, 18 Hanover Street, Hanover Square.

George Joseph Fongo, 15 Allez Street, St. Peter Port, Guernsey.

Maurice Fongo, 36 Belmont Road, St. Heliers, Jersey.

Hugh W. Dewes, 10 Cavendish Place, W.

NEW YORK ODONTOLOGICAL SOCIETY.

The following report was adopted by unanimous vote of the Society :

The Committee appointed in reference to the death of our esteemed friend, Dr. Samuel S. White, submit the following as their report :

The intelligence of the sudden and unexpected death of our friend and co-laborer, Dr. Samuel S. White, of Philadelphia, awakens within our hearts emotions of the most profound sorrow ; and while bowing to the Divine Wisdom which has taken him away from us, we are impelled to take the first opportunity of paying a grateful tribute to his memory and to give expression of our appreciation of him as a man.

In so doing, our minds naturally revert to his earlier career, and thence forward to the unfortunate hour which closed a life full of promise, usefulness, honor and success.

All will bear testimony that he was a genial and cordial gentleman, of high culture and noble impulses, full of kindly charities, and always alive to the interests of our profession. With us he was ever a welcome

guest; cheering and encouraging us in our aspirations, and giving character and tone to our deliberations.

His relations to our profession were of a peculiar character. He was one of us from the beginning. Commencing as a student and following along through a varied career to his graduation, his interests have ever run parallel with our development and growing needs. He was thus better qualified than any other man to respond to the demands of our ever-advancing profession. Enterprising, even to daring, he never failed to take every rational opportunity to develop and establish any prospective good to our calling.

While recognizing the hand of Providence in thus removing from our midst, in the very fullness of his prime and usefulness, our friend, Dr. Samuel S. White, and while deplored our own loss, we do, as a Society, tender to his family and friends our heartfelt expression of sympathy and condolence.

CHAS. E. FRANCIS,
BENJ. LORD,
WM. JARVIE, JR.,
W. H. DWINELLE,
A. L. NORTHRUP,
Committee.

BROOKLYN DENTAL SOCIETY.

BROOKLYN, Feb. 12th, 1880.

At a regular meeting of the Brooklyn Dental Society, held Feb. 9th, 1880, the following report of Special Committee expressive of the sentiments of the Society in relation to the death of Dr. Samuel Stockton White, of Philadelphia, who died in Paris, Dec. 30th, 1879, was unanimously adopted :

When the sad intelligence flashed across the sea from a foreign land that death had removed from us our honored friend and brother, in the full maturity of his manhood and the height of his usefulness, our first thought was, Why should such a man, so identified with the interests of our profession, so active and useful in the cause of charity and religion, be taken away at the very summit of his power?

“Death loves a shining mark,” and the ways of Providence are incomprehensible; but while we mourn our brother we bow our heads in humility to those decrees which emanate from an All-Seeing Power.

Dr. White was a man whom we had all learned to love and honor for his many manly virtues and his sterling integrity.

In his death the Dental Profession has lost one who was always ready to aid any movement for the advancement of its best interests.

Although lately he was not identified with the profession as a practitioner, his position as a manufacturer of the many appliances needful in our practice, had brought him into communication with the humblest as well as the highest in our ranks, and all can testify to his clear comprehension of what was necessary for our use, his willingness to aid those struggling in adversity, and his general interest in everything pertaining to the wants of our profession.

The Dental Profession throughout the world will mourn his loss; our several societies will miss his magnetic influence, and each individual dentist will feel that he has lost a friend and brother.

His memory will always be to his family everything that is noble and lovable, and we tender to them our heartfelt sympathy in this hour of our bereavement.

C. P. CRANDELL,
Recording Secretary,
Brooklyn Dental Society.

W. M. B. HURD,
W. H. ATKINSON,
H. G. MERICK,
} Committee.

TWENTY-FOURTH ANNUAL COMMENCEMENT OF THE PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

PHILADELPHIA ACADEMY OF MUSIC, }
February 27th, 1880. }

There was a crowded and brilliant audience, good music, kind words, pleasant time.

Two German ladies graduated and were received with marked honor and attention.

Prof. Gross presented diplomas and said, "God bless you, girls—go home and do all the good that you can."

At night an entertainment was given and the Class of 1880 was launched out into life.

Valedictory was by W. E. Van Orsdel, D.D.S.

Address to the Graduates by Prof. C. N. Peirce, D. D. S.
Music by Carl Sentz' Orchestra.

The graduates are :

Name.	State.	Name.	State.
D. D. Atkinson,	Ga.	R. E. Johnson,	Ohio.
Lewis S. Ayers,	N. J.	W. S. King,	Tenn.
M. Allman,	Pa	C. Kuhnast,	Germ.
William C. Barrett,	N. Y.	J. E. Libby,	Pa.
F. W. Bennett,	Ill.	John H. Lloyd,	Pa.
Adolphe Betancourt,	La.	H. S. Lowry,	Ohio.
L. J. Blanchard, M. D.,	Me.	F. S. Maxwell,	Ohio.
J. Henry Boger,	Pa.	C. H. McCowan,	Pa.
Chas. R. Brady,	Pa.	Louis A. Melze,	Mich.
Rafael Chaguaceda,	Cuba.	F. M. Miller,	Ky.
Horace M. Christy,	Pa.	Walter H. Neall,	Pa.
R. L. Culpeper,	W. Ind.	F. R. Newcomb,	Pa.
L. F. Dayan,	N. Y.	C. E. Paddock,	Ohio.
Affonzo H. DeMoura,	Brazil.	Jacob Perkins,	Pa.
John B. Dewees,	Ohio	W. A. Phreaner,	Pa.
B. K. Fetzer,	Germ.	W. M. Risdon,	N. J.
C. K. Fiske,	Cana.	James W. Scott,	Pa.
Emil Fuerth,	Pa.	W. K. Shearer,	Pa.
Eugene Goebell,	Germ.	Wm. G. Smith,	Md.
C. H. Goodrich,	Minn.	J. A. Suarez,	Cuba.
Samuel A. Graham, Jr.,	Md.	Robert F. Swain,	Pa.
John F. Hain,	Pa.	D. S. Thomas,	Pa.
H. R. Harbison,	Pa.	J. L. Tierney,	Pa.
C. J. Hazard,	N. J.	W. E. Van Orsdel,	Pa.
Thos. K. Heaton,	Pa.	H. L. Whitbeck,	N. Y.
C. T. Hewes,	Ill.	F. D. Winchester,	Ill.
J. Calder Hinkle,	Pa.	E. N. Woodward,	Cal.
G. W. Hosterman,	Pa.	Harry Zimmerman,	Pa.
T. L. James,	Iowa.		

The following named graduates are the successful competitors for the different prizes offered:

1. **WILLIAM G. SMITH**, of Maryland.—Prize of a dental engine by S. S. White, D. D. S., for the best specimen of plate work.
2. **H. ZIMMERMAN**, of Pennsylvania.—Prize of a gold medal by Prof. W. F. Litch, for the second best specimen of plate work.

3. J. HENRY BOGER, of Pennsylvania.—Prize of a set of Varney's plugging instruments, by S. S. White, D. D. S., for the best thesis on the conservative treatment of the pulp, with Honorable Mention of Horace M. Christy, of Penna.
4. Honorable Mention of C. K. Fiske, of Canada, and J. Henry Boger, of Penna., for specimens of continuous gum work.
5. J. E. LIBBEY, of Penna., L. S. AYERS, of New Jersey, C. H. McCOWAN, of Penna., C. R. BRADY, of Penna., J. W. SCOTT, of Penna.—Prizes of a gold medal by Prof. C. N. Peirce, to each for the best specimens of gold fillings in the mouth.
6. H. S. LOWRY, of Ohio, and C. H. FISKE, of Canada.—Prizes of a silver medal, by Prof. C. N. Peirce, to each, for the second best specimen of gold fillings in the mouth, with Honorable Mention of C. H. GOODRICH, of Minnesota, and R. E. JOHNSON, of Ohio.
7. R. L. CULPEPER, of West Indies.—Prize of gold medal, by Prof. C. N. Peirce, for the best Thesis on Periodontitis, with Honorable Mention of the Thesis of J. E. Libbey, of Penna., Adolph Betancourt, of Louisiana, Clara Kuhnast, of Germany, and Eugene Goebell, of Germany.
8. W. A. PHREANER, of Penna.—Prize of a gold medal, by Prof. J. Ewing Mears, for the best dissection of the muscles of mastication.
9. W. K. SHEAVER, of Penna.—Prize of a silver medal, by Prof. Mears, for the best Thesis on Tumors of the Jaws, and the methods of treatment.
10. CLARA KUHNAST, of Germany.—Prize of a gold medal by Prof. T. L. Buckingham for the best examination in chemistry, with Honorable Mention of R. L. Culpeper, of West Indies.
11. J. L. TIERNEY, of Penna.—Prize of a gold medal, by Prof. H. C. Chapman, for the best examination in Physiology, with Honorable Mention of B. K. Fetzer, of Germany.
12. LEWIS S. AYERS, of New Jersey.—A prize of \$25.00 by the Faculty, for the best final examination on all of the branches, with Honorable Mention of Clara Kuhnast.

THE FOURTEENTH ANNUAL COMMENCEMENT OF THE NEW YORK COLLEGE OF DENTISTRY

Was held in Chickering Hall, February 24th, 1880. The graduating class was composed of twenty-eight students, among whom were repre-

sentatives from nearly every portion of the globe. The following is a list of the graduates :

Name.	State.	Name.	State.
B. Arteaga,	Cuba.	E. W. Knickerbocker,	N. Y.
V. Barranco,	Cuba.	W. L. Obreight,	N. Y.
H. Brauer,	Ger.	A. L. Peters,	N. Y.
A. J. Butler,	N. Y.	G. W. Price,	Cal.
W. C. Deane,	N. Y.	L. B. Price,	Conn.
E. O. H. Elmer,	Ger.	A. B. Primo,	Brazil.
A. W. Edwards,	France.	D. K. Reinhold,	Penn.
W. F. Gerrish,	R. I.	A. R. Starr,	N. Y.
K. Grosh,	Ger.	W. E. Stelle,	Penn.
K. A. Herrmann,	Ger.	O. Schmidt,	Ger.
F. Latsen,	N. Y.	G. A. Walkley,	Mass.
W. E. Linstedt,	N. J.	G. D. Costales,	Cuba.
H. Lambert,	Poland.	W. F. Davenport,	N. Y.
B. C. Magenniss,	N. J.	Z. T. Sailer,	N. J.

The exercises were opened with prayer by the Rev. Nathaniel W. Conkling, D. D.; after which the degree of D. D. S. was conferred upon the graduates by Dr. W. H. Allen, President of the Board of Trustees. The prizes were then awarded by Prof. Alex W. Stein, M. D. The first prize consisted of a gold medal, presented by the faculty to the graduate passing the best general examination, and was awarded to William Curtis Deane, D. D. S. Honorable mention was made of the creditable and searching examination passed by Alfred R. Starr, D. D. S.

The second prize consisted of a dental engine, presented by the late S. S. White, Esq., to the graduate who shall have made the best piece of artificial denture while in the college; and while many of the pieces of work executed by the various contestants were of rare excellence this prize was awarded to A. W. Edwards, D. D. S. The third prize, consisting of a set of dental instruments, was given to the graduate who presented the best paper upon the treatment of exposed pulps, and was awarded to D. K. Reinhold, D. D. S. The valedictory address was delivered by Edwin W. Knickerbocker, D. D. S., of the graduating class, after which Rev. John P. Newman, D. D., addressed the graduates in an able and earnest manner.

Excellent music was rendered during the evening by Eben's band.

THE OLD OAKEN BUCKET.

(As Revised and Edited by a "Sanitarian.")

With what anguish of mind I remember my childhood,
 Recalled in the light of a knowledge since gained ;
 The malarious farm, the wet, fungus-grown wild-wood.
 The chills then contracted that since have remained ;
 The scum-covered duck-pond, the pig-stye close by it.
 The ditch where the sour-smelling house-drainage fell ;
 The damp, shaded dwelling, the foul barn-yard nigh it—
 But worse than all else was that terrible well ;
 And the old oaken bucket, the mold-crusted bucket,
 The moss-covered bucket that hung in the well.

Just think of it ! Moss on the vessel that lifted
 The water I drank in the days called to mind,
 Ere I knew what professors and scientists gifted
 In the water of wells by analysis find.
 The rotting wood fiber, the oxide of iron,
 The algæ, the frog of unusual size,
 The water, impure as the verses of Byron,
 Are things I remember with tears in my eyes.

And to tell the sad truth—though I shudder to think it—
 I considered that water uncommonly clear,
 And often at noon, when I went there to drink it,
 I enjoyed it as much as I now enjoy beer.
 How ardent I seized it with hands that were grimy,
 And quick to the mud-covered bottom it fell ;
 Then soon, with its nitrates and nitrites, and slimy
 With matter organic, it rose from the well.

Oh ! had I but realized, in time to avoid them,
 The dangers that lurked in that pestilent draught,
 I'd have tested for organic germs and destroyed them
 With potassic permanganate ere I had quaffed ;
 Or, perchance, I'd have boiled it and afterward strained it
 Through filters of charcoal and gravel combined,
 Or, after distilling, condensed and regained it,
 In potable form, with its filth left behind.

How little I knew of the dread typhoid fever
 Which lurked in the water I ventured to drink ;
 But since I've become a devoted believer
 In the teachings of science, I shudder to think.
 And now, far removed from the scenes I'm describing,
 The story for warning to others I tell,
 As memory reverts to my youthful imbibing,
 And I gag at a thought of that horrible well,
 And the old oaken bucket, the fungus-grown bucket—
 In fact, the slop-bucket—that hung in the well.

J. C. BAYLES, in the *Sanitarian*.

JOHNSTONS'

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SUCCESS IN OPERATING NOT OBTAINED BY THE HEROIC TREATMENT.

BY J. T. CODMAN, D. M. D.

(Read before the Mass. Dental Society.)

SINCE the formation of the societies which are assembled here to-day, a whole era of so-called Dental Science has arisen, which has wonderfully modified the systems of past practice. As an observer of all the different modes of operating; as a constant reader as well as constant operator, and as an attendant of very many society meetings, I feel I have some right at this day to criticise those modes for the benefit of practitioners younger than myself, and for the benefit of all who are willing to lend an attentive ear for a few short moments to the results of my observation and experience. Up to a certain time, dating within that experience, there was but little change from the old modes, when almost at once they were abandoned for newer ones—for untried ways: for new systems and departures: for new preparations of gold, and new compositions. Radical changes were in vogue, hand-pressure in various ways was changed for mallets of various sizes and weight, pitholes were drilled to retain fillings, half dead and stinking pulps were covered over in expectation they would be healed if only covered with oxychloride of zinc, or some equivalent, by those, too, who did not even know the nature of the material or its composition: or else the roots were drilled and attempted to be filled to the "apical foramen." Whole crowns of

gold were made at enormous labor, and considered the right thing to do, even if they, like Paddy's gun, "killed at both ends," wearing out the dentist and wearing out the patient.

Theories sprung up like magic; new alveoli could be produced; denuded teeth could be clothed again in the flesh, aye, even in this world. By digging deep and scraping well, teeth that rattled in their sockets like dice in a dice-box, or like marbles in a little boy's pocket *almost*, could be made firm again. New medicaments were found; salycilic acid, thymal, and carbolic acid would rejuvenate the dental world. Little, tender pulps, as delicate as the nerves and tissues of the eye, were to be "sopped" in carbolic acid to make them healthy before they were buried forever in a grave with a silver or golden headboard. The whole of the alveolar process was to be cut away, after extracting, to save time in putting in a new set. But what seems most fabulous of all, teeth could be extracted, filled, replanted or transplanted, and work like new, even though they had been out of the head for days, weeks, or months!

These are a few of the new notions or innovations. But there are so many theories, and so many operative suggestions that I could not, if I would, recall them all; but I, and most of you, can recall the enthusiasm with which each one has been hailed, and the ardor, the heroic ardor, with which they have been acted on. How calm are now the waves of dental feeling! The hobbies, like worn-out barks or ships disabled in battle, float loosely about without a friendly hand at the rudder to guide them to port. One only great sensation remains; from one ship alone a flag of distress hangs out—feeble out—endorsed, like a poor note at the bank, by two endorsers, labeled *the new departure*. Why, men alive! there have been a hundred new departures in twice that number of months, every one of them as radical and new as the newest one named.

Among all these changes there have been men who were heroes, who pushed their discoveries and inventions to the front, and swayed the whole profession out of its ordinary paths of prudence. They urged extreme practices, the heroic, and this portion of dentistry, I claim, has failed to meet the demands of our patients, and of ourselves.

If I wish to review the principles and practices of the past, I must pass hastily by those that were not founded on just mechanical laws and theories, and could not possibly stand, such as boring holes in the necks of bicuspids, superior or inferior, to anchor fillings in them, thereby

weakening the tooth where all the strength of the tooth was needed most; the use of gold in its extreme cohesiveness; the building from the base of a filling with crystal or shredded gold, etc., etc. Where are the heroes now who once proposed and argued in favor of these things? Where are the men to-day, to talk up No. 120 gold; or No. 50, or No. 40, or No. 20 even? As scarce as blackberries in winter. Only a few left, and those well bottled. Where are the heroes who argued drilling the roots of molars and filling them with gold to their apices, and have told us that they could do it every time; that is to say, *almost* every time, if we, brought up all our lives to mechanical practice, could not? Their failures answer for them! Their broken lances in the roots, and their gold pushed beyond the teeth into the alveolus prove their failures.

Where are the heroes of built up molars laid in airy foundations, and built down corners projecting out more than half way of the teeth? Gone, like the Dutchman's party! Inasmuch as these have been and are practical, they have succeeded, it is true. But how little of success! what a small egg for so much of cackle!

But I began with a text, "Success in operating is not obtainable by the heroic practice," and I must answer why it is not obtainable. A hero is a bold man, and heroic practice means bold practice—daring practice—vigorous practice; and these are not comparable with the delicate and diseased conditions that we find in dentistry. Nature likes not rashness nor harshness, and the modes of the heroic have been harsh and rash. I remember with what astonishment I heard an able member of our profession say he destroyed (split) a half a dozen teeth in getting used to his mallet, *i. e.*, broke them to pieces. I have a patient from an operator who probably now sits before me, where the fillings were beautiful specimens of polished gold, but one after one the teeth have given out, and are pulpless or lost, until scarce one of the eight or ten filled is left intact; all failed because of the countless heavy blows of the mallet. They could all have been saved by gentle manipulation.

We give no quarter to the men who extract teeth by the wholesale to place in return their artificial substitutes. Why should we give any quarter to men who hammer and knock around the mouth with their instruments as a ball rattles among ten-pins?

Remember this, brother operators! When you strike down upon a tooth with a mallet, you strike on a thin vascular membrane that lies between two unyielding hard bones, and if that membrane is destroyed, the tooth is past cure. All the Riggs' scrapers in the world, all the

attempts at reproduction of tissue in the world, cannot cure it—its doom is sealed !

The preservation of integrity of the periosteum, or the lining membrane of the tooth cavity, is the key to the salvation of the tooth. Make a note of it !

The next thing in importance, and which is much neglected, is the preservation of the relation of the gums at the gingival margin of the teeth. I am thoroughly convinced that true success will not be found without more attention to this much neglected portion of our art.

At the point of union with the gums, at the junction of enamel and dentine, delicate little nerve fibres run out of tooth and penetrate the gums, uniting external and internal tissues and making a unity comfortable with the rest of the organism.

When the unity of gum, tissue and nerve is broken, denuding of the tooth commences, and increases rapidly in proportionate ratio to the distance already denuded ; therefore, no wedges of hard wood or steel should be driven between teeth harshly ; the file or the separating disk should not be allowed to rupture this organization—this triple unity. Steel clamps should be used, if at all, with great care, and when any would-be instructor tells you to tie a string around a tooth with all your strength he gives you bad advice, which you would do well not to follow, for the reasons I have given.

And when some person gives nitrous-oxyd gas to a patient until he is livid, until the blue veins stand out all over his face, and the skin is purple and dark and drops of perspiration stand cold and prolific on his forehead, he may think he is a hero, but it may be that he is not. I denounce all such practice. It is contrary to good sense, to physiological law, and dangerous results will follow—do follow it—though not surely fatal results. I have not seen this barbarism. I know that it is not endorsed in theory by any worthy member of our profession ; but when a patient is sent away from an office by men who are unwilling to risk their own reputations, or who dislike to or decline to, give this anæsthetic or any other one, they have not done their whole duty to their patients, to themselves, or to the public, until they *find* for a *surety* that they are placing their patients in a safe office and under the best of skill—such skill as is endorsed by the best knowledge of dentists and surgeons—and they should not rely on popular notions of the “best place.”

It is not strange that those who make a specialty of an operation or a

practice should become heroic, should venture out into unknown and untried depths of license, but *we* have to deal with those who demand of us *safety*. If we cannot treat them safely, we must put them in a place of safety, or be responsible. It will not do for you to say, holding up your hands in astonishment when an accident happens, "I did not know that they did things in *that* way." It is your duty to know the way in which it is done or is to be done.

The heroic tendency, I am sorry to say, does not confine itself to the dental profession. Any observant reader must notice that it runs into the surgical world as well, and operations are spoken of, are made light of, comparatively speaking, that are of the severest and most dangerous sort. I have seen such a case, lately, where all of one-half of the palatine bone from the median line, with the alveolus attached, was removed from the mouth of a patient for some cause, leaving a large unclosed opening, displaying the bones of the nose, spoiling the voice, and making it almost impossible for the patient to drink without the fluid running from the nose. She can eat no solid food: she has no teeth in the remainder of the superior arch, and is in a state where life is of but little value and cannot, without help, be long extended. In order to perform this heroic operation nearly right-angled cuts were made through the cheek into the oral cavity, laying bare the right superior maxillary bone, which was sawed away from its connection and taken out through the aperture in the cheek. Of course, the facial artery was tied and the wound sewed, which left a very ugly scar, and after it was healed the patient was discharged cured! And such a cure!

And what was this heroic surgery done for? For a swelled face, for a tumor of the antrum, *I guess*—for I may as well guess as some other persons. The patient says there was no tumor found! Now the *possibilities* are that the patient is wrong, but all the probabilities are that the patient is right and that there was no need of the operation. If I may guess again, I'll guess it was a case of extended inflammation produced by wearing an artificial denture over some unextracted roots of teeth. But it may be said that he is a bold man who dares to insinuate that some of the most eminent surgeons of New England or the world do not know when to operate. This I admit. But this I also affirm, that no one is capable to criticise fairly surgical operations on the mouth, except alone the well-practiced and well-read dentist. He alone, outside of the special surgical fraternity, can of good right do so and should do

so, for a check is needed on the growing rashness of these men, who would do well to consult a dentist now and then.

One more glimpse of the heroic tendency and I am done. It is a delicate portion of the subject and where I am liable to be misunderstood; but the tendency to extraordinary fees for our operations, to overrate the value of our skill and labor, to make heroic charges for operations has its bad effect. It may swell the pockets of a few, but it will lessen the general receipts of the profession, for the question will be asked, as it is now very often, not is he a good or a fine operator, but is he a "*dear* dentist?" We all know that good operations are costly and that to secure a moderate living a fair fee must be charged. But in these times of retrenchment the moderate man is liable to go to the wall, for the great public, who do not discriminate, asks the question as to cheapness of fees, "Is he *dear*, I can find a cheaper?" whereas the fewer number, who expect to pay high fees, run for the most assuming man. This separates and divides the practitioners, for a while, certainly, if not for always. The few who are enabled to run the high fee plan succeed. Those who run the low fee plan catch those who wish to pay the lowest they may, whilst the moderate man will fail, or have to wait until times change, when those who believed that they could get "something for nothing" have found out their mistake, and those who thought they could save their teeth from liability to decay, by paying money enough, shall have also found their hobby broken.

I must note here, however, that this heroism has had the greater portion of its day. It is a long while since we have heard of the thousand-dollar fees, and the hundred and even the fifty-dollar fillings are mostly things of the past. There are two reasons for it—first, the dentist and oftentimes the patient has grown wiser, and, secondly, they are things of the *past* because they have mostly passed away.

Let us eradicate the tendency to extremes in our profession; and believe the experience of many years teaches me that the only safe way lies in steady, progressive, faithful work, unswayed by erratic teachers; in careful, gentle operations; and if we so work, the time will come when we will say of the hero :

" He has slept his last sleep,
He has fought his last battle,
No sound can awake him to glory again."

WATER AS FUEL.

BY WM. C. CONANT.

The satyr in the fable was not more scandalized at the man who blew hot and cold with the same breath, to warm his fingers and to cool his porridge, than the old acquaintances of water as the natural cooler and refresher of the world have been to find it artificially asserted as supreme in the opposite office of heating. It may well seem the extreme of paradox that the same element which tempers the excess of both solar and animal heat should also become the great source of supply for their deficiency. And yet why should not the universal absorbent of this power be made to restore it? We have long known that water is but the fuel of the universe as transformed by combustion—a cold residual of a cosmic conflagration that still rages in the central mass of our system, and has hardly subsided as yet in its principal fragments.

Hydrogen—the “water-parent,” or distinctive element of water, as its name imports—may be regarded, metaphorically at least, as a metal, which no degree of cold in nature, or where life exists, can reduce to the density of a liquid. It oxidizes so eagerly, and in such infinite abundance, as to be the only combustible comparatively worth mentioning: nowhere to be found, in fact, but in vehement combustion or in its cold result as water, unless where locked in the embrace of its secondary affinity, carbon, in the various oily products of organic life. In the latter condition—the hydrocarbons—hydrogen is protected from the all-devourer, oxygen, and enters into innumerable uses. As the inflammable ingredient of wood, of bituminous coal, of petroleum and other vegetable and animal oils, we have it sealed up by Providence, as it were, for a temporary and portable fuel, pending the full development of man’s proper authority over the elements—temporary, for it has long been a source of anxiety to economists that the resources of forests and coal-fields are so finite and their prospect of exhaustion so definite. It is evident from the coal “measures” that man was never intended to remain dependent on what he could pick up ready made for his needs, in respect of fuel any more than of other things; albeit this provisional supply for his infancy was made ample and accessible above all others. Even the novel service of carbon (which we shall observe more particularly further on) in smelting hydrogen “ore” from the vast mines of

lake and ocean—as it does also the oxides of other metals from telluric mines—bids fair to be divided with some more unlimited artificial agency in due time. To the present time, carbon, diffused and heated to intense brilliancy in burning hydrogen, has been our only artificial illuminant on a practical scale. And yet it now seems likely enough to be superseded in this office also, at no distant day, by fixed illuminators excited by the combustion of hydrogen or the force of electricity.

The better hydrogen becomes known, therefore, the more interesting and important to us it is found beyond all other elements, oxygen scarce excepted. To all the vital and delightful uses of water, as we have seen, it adds also those of light and heat. For, although scarcely luminous in itself, hydrogen is a principal source of the heat which makes other substances luminous, and is thus a chief condition of illumination. Terrestrial flame is generally hydrogen gas in the act of combustion, colored and made brilliant with white-hot carbon also oxidizing. Carbon may therefore be called a diffused illuminant, and the only one of any importance available at a living temperature, although in the terrific conflagration of the sun all things, even the most stable, are diffused in gaseous incandescence. The more stable substances that maintain their solid form in the comparatively moderate terrestrial heat of burning hydrogen until they become intensely bright are called fixed illuminators. Progressive examples may be cited: in platinum, the most non-fusible of metals, which endures and emits in light the intensity of hydrogen burning in air; and in lime, a still more refractory substance, which glows with dazzling power in the fierce combustion of hydrogen with pure oxygen, commonly known under the name of calcium light.

If Mr. Lockyer should succeed in verifying his startling hypothesis that hydrogen may be in fact the *only* thing in the material universe—not the water-parent only, but the all-parent—our present celebration of this great element would prove neither inopportune nor inordinate!

After all that has been said of it, the nineteenth century furnishes an ever-fresh and amazing retrospect. Within the memory of the living these now common facts—too fast and sublime, however, to be called familiar—were hid, with the great bulk of modern science, indeed, from the sages of the world. Oxygen had but just been discovered, a hundred years ago; hydrogen was unknown; water was supposed to be an elementary substance; fire and flame were mysteries; what the sun might be, and the nature of its light and heat, nobody could guess. After hydrogen had been found elsewhere, it was discovered (in 1781)

that water is the result of its combustion with oxygen, and in 1805 that two parts in three of the vast volume of that element pervading and covering the earth are contributed by this ethereal ingredient. Several ways to dissociate the two gases were found, but the common and practical method was and is the contact of steam with red-hot carbon. This, in the absence of free oxygen, results in a transfer of the water oxygen to the carbon fuel in combustion, leaving the water hydrogen free. Red-hot iron answers a similar purpose; forming an oxide of iron (rust) in place of carbonic acid, but the consumption of so valuable an article as iron in the process, has hitherto excluded this method from practical use, although there is now some prospect that by deoxidizing the iron-rust it may become available over and over for the elimination of hydrogen at a minimum of cost.

Until a recent date it has been quite generally taken for granted that, since to separate the two gases of water must cost as much heat as they will evolve by reuniting in combustion, there could be no possible profit in forcing the separation for the sake of fuel. Hence, the application of water hydrogen to practical purposes has been regarded as visionary. But there are some considerations on the other side also that seem to have been overlooked. The unavoidable waste in burning solid fuel has been found to range from fifty per cent. as a minimum in the arts up to ninety-five per cent. as a common proportion in stoves, and thus to exceed by several volumes the whole cost of obtaining from water a gaseous fuel which can be used with but insignificant waste. Besides this, the doubted possibility of economizing the carbonic acid has also been realized, and that hitherto worthless incumbrance has been incidentally recarbonized in the process and utilized as carbonic oxide, to an economic success. Direct economies in the process have also been achieved, preventing great waste of heat in various ways, including that of a large amount hitherto lost in cooling off the finished gas. These recent—and American—improvements have suddenly given a practical character to the manufacture of water-gas and a practical purpose to the elucidation of the subject.

Notwithstanding an unbroken succession of failures in the economic sense for more than half a century, the unlimited and ubiquitous stores of hydrogen "ore" have mightily stimulated inventors to the task of extracting treasure from these mines of fuel. Few objects have engaged the ingenuity of the nineteenth century in so extensive and indefatigable researches, with (prior to 1874) so little result. Scores of patents have

been taken out, mostly by French and English inventors, for different methods of obtaining and employing water hydrogen for illuminating purposes : and a number of minor towns and manufactories in Europe have been and are to this day supplied, by as many different methods, with water-gas. Want of space forbids us to review these methods as to their successes or defects. The common inherent obstacle to their progress is the lack of a sufficient margin of economy to overcome the immense vested interests that oppose any departure from the use of bituminous coal. Such a margin can never be attained under the waste inseparable from the use of retorts, heated externally, to which all the European inventors have adhered. One of the best of their efforts is that of Tessie du Motay, adopted and modified by the Municipal Gas-light Company of New York, and lately purchased of the latter for the down-town district held by the old New York Gas-light Company. Its advantages, however, are subjected to an obvious drawback, in addition to others before mentioned, in a necessity for reheating the gas to give it a fixed character.

In short, the test of successful propagation had never been met by any system, in any measure, on either side the Atlantic, until the introduction of the recent American process, which has proved both in theory and practice a consummation and a contrast to the whole previous history of invention in its line.

But illuminating gas and the struggles of half a century to cheapen it by water hydrogen, have interested us but incidentally as leading up to a later and still more important result—the practical availability of water-gas as *fuel*. In fact, the rapid progress and generally anticipated success of the electric light have given pause to all present enterprise in illuminating gas. New movements are almost suspended, and shares in the oldest and most profitable works are no longer the favorite investment. A probability has suddenly appeared that the uncounted millions of irrecoverable capital invested in gas mains, pipes, holders, etc., may eventually find no other employment but to supply fuel-gas to the households that have hitherto depended on them for light. In view of such a prospect the feeling of the gas interest toward water hydrogen must become seriously modified. The lately dreaded process begins to look like a friend in need—the only hope of rescuing much capital from total loss in the not improbable event of a satisfactory and economical diffusion of the too concentrated electric light.

Our remaining space, then, will be dedicated mainly to fuel-gas, and

the process as modified for that project ; first, briefly describing the apparatus and the distinctive processes for producing by it illuminating and non-illuminating or fuel-gas.

Disregarding details, the apparatus consists, substantially, of a strong brick cupola-furnace with an iron shell, as gas-generator ; this connected by a flue with a secondary chamber as superheater, filled with loose fire-brick nearly to the top. The gases generated from an anthracite fire in the furnace are driven by the air-blast through the connecting flue into the secondary or superheating chamber, at the bottom ; here they meet a second air-blast, which urges them to a blaze of intense and complete combustion ; and in this superheated condition they are forced up through the labyrinthine interstices of the fire-brick with which the interior of the chamber is piled.

So effective are these simple arrangements that, in the few minutes required to kindle the mass of coals in the furnace to a cherry-red, the mass of fire-brick in the superheater becomes white-hot and ready for use. This result is the work of carbonic oxide and other products of imperfect combustion usually passed off in the smoke of our domestic chimneys, and finely illustrates the main point of advantage in gaseous fuel—its more complete utilization. If any of us could see the regular gaseous waste from our kitchen-stoves kindled up in the chimney to a pitch of heat sufficient to melt iron there, it would be a convincing proof of the estimated loss of ninety-five per cent. of our fuel, and would resemble faintly what is done outside the fire-chamber of the Lowe or Strong furnace, and in what answers to the chimneys of our dwellings.

At this point (to return) the air-blast is shut off ; the outlet of the chimney is tightly closed ; and a cock is turned which lets a jet of steam from a boiler into the bottom of the furnace and up through the mass of glowing coals. Instantly the process of combustion ceases (as between the coal and atmospheric oxygen), and the generation of water-gas begins ; in other words, the coal now takes oxygen in combustion from the steam which has been substituted for air, and leaves the water hydrogen free. The hydrogen, lightest and thinnest of gases, which had been pent in the form and consistency of water, is now itself again, expanding to vast volume, like the ethereal *genie* let out of the casket by the Arabian fisherman, and ready to do the bidding of its liberator. At the same time a valve is opened in the upper part of the furnace, which lets fall a steady shower of crude petroleum on the fire. The pungent and fuligi-

nous vapor in which the oil rebounds from the burning coals is a heavy solution, so to speak, of carbon and hydrogen. Into this thick mixture the free water hydrogen, rushing up from the decomposition of steam below, freely enters, diluting it to proper proportions for burning completely and cleanly, without smoke, in the open air. Another ingredient, rolling up from the fiery laboratory, also mingles in the tempest of hot gases, and still further heightens the calorific and consuming powers of the compound. This is carbonic oxide, the great value of which, either in a fuel or illuminating gas, and its spontaneous development in place of incombustible carbonic acid, are among the advantages which have given to the American method the first decisive success in supplying the public with water-gas.

The oxygen of the steam, as we have seen, on entering the burning coals at the bottom of the furnace, instantly unites in full proportions with the first carbon it encounters, forming carbonic acid. But this carbonic acid, as fast as formed, is driven upward through the fire, and before it reaches the other gases, its greedy oxygen has gorged itself with a double portion of carbon from the coals, and it is now carbonic oxide—a gas rich with carbon, which is ready to unite in combustion with a further proportion of oxygen wherever it can find it. But it finds no oxygen among the gases to which it is introduced, for the air-blast was shut off when the steam was let on. Consequently, it enters into the compound, and remains as a third combustible.

Meanwhile, the mingled gases are rushing from the furnace, under high pressure, through the flue into the secondary chamber or super-heater, and up through the white-hot mass of fire-brick which it contains. Struggling through the hot crevices in attenuated streams, the gases reach a temperature of nearly $2,000^{\circ}$, at which all the elements present are perfectly released and enabled to form such recombinations as their stronger affinities dictate. As the oxygen here finds itself in a hopeless minority, and remains dominated by the superabundant carbon with which it is associated in carbonic oxide, there is no rival to forbid the bans between the king and queen of combustibles—Hydrogen and Carbon.

The charge of coal in the generator makes from five to seven thousand cubic feet of gas; the process of generation taking thirty minutes. The steam is then shut off, and the generation of gas ceases. The lid is raised, the air-blast readmitted, and ordinary combustion is resumed. The stoker approaches the fiery pit on a floor level with its mouth and

pours in another charge—a barrel of anthracite—fastens down the lid, and for fifteen or twenty minutes the air-blast again urges combustion until the mass in the generator is of a lively red, and the fire-bricks in the superheater are once more white-hot for a second run of gas. At every sixth charge the ashes are raked out, and two barrels of coal, instead of one, are put on.

When the eight sets of apparatus in the Baltimore works are in operation, the actual product per twenty-four hours, with all delays, amounts not unusually to 600,000 cubic feet; and it has been practically demonstrated that 1,000,000 cubic feet could be made by the same apparatus in the same time. Provision is also made for as many more sets of apparatus as may be required by the future extension of the business.

We are now prepared to understand clearly the later and more important process of making pure *fuel-gas*; which commends itself to us as the next great economic stride of the arts, and therefore as the true “objective point” of this article.

The first stage of the process invented by Mr. Strong is so nearly the same with that already described that a repetition is unnecessary, the furnace being fired up until the loose brick contents of the secondary chamber or superheater are at a white-heat, when, as before, gas-making is commenced. But here the current of the process so to speak, is reversed. Instead of letting the jet of steam in at the bottom of the furnace, we let on steam at the other end of the system, *i. e.*, at the top of the superheater, and pass it directly downward through the mass of white-hot fire-brick. This raises the steam to a perfectly invisible gas, hotter than devouring flame, as it rushes from the superheater, through an extra flue, into the upper part of the furnace. There it meets a shower of anthracite coal-dust instead of petroleum, sifted down into the furnace from above, and literally burns it up with intense combustion—precisely as coal-dust would be devoured in the fierce flame of the blast-furnace seven times heated, except that the oxygen of this combustion is supplied entirely by a steam- instead of an air-blast. In other words, the steam furnishes both heat and oxygen for the instant conversion of the coal-dust to carbonic acid, with the consequent release of its own prodigious volume of hydrogen. Under their own increased pressure, the gases continue without pausing, down through the mass of glowing coals. In making this passage, the carbonic acid takes up a double portion of carbon from the hot coals and becomes carbonic oxide—the powerful heating gas so often seen burning in a lambent violet flame on the sur-

face of anthracite fires when the air is let on them. As there is no access of atmospheric oxygen to the furnace, there is no opportunity for the combustion either of this gas or of the freed hydrogen, and accordingly both pass out together at the bottom of the furnace, through a pipe which conducts to the gas-holder.

The product of this process, before purification, has been rigorously analyzed by the several methods, by Professor Gideon E. Moore, Ph. D., and proves to be 52.76 per cent. pure hydrogen, 35.88 per cent. carbonic oxide, and 4.11 per cent. marsh-gas, making nearly ninety-three per cent. of the whole volume in these powerful calorific agents, leaving only six to seven per cent. of incombustible waste (carbonic acid and nitrogen). Wurtz also gives substantially the same proportions, in Johnson's "*Cyclopædia*."

The purity of this fuel is a consideration nearly sufficient of itself to revolutionize the manufacture of iron, and especially of steel, for which, in its perfection, few if any mineral coals are sufficiently free from such troublesome ingredients as sulphur, phosphorus, etc. ; but of this further on.

With respect to comparative calorific values, Professor Moore's report shows, by rigorous calculation, that the Strong fuel-gas will produce 2.78 times the practical effect of the amount of coal consumed in its manufacture, supposing the same coal were burned directly by the most perfect methods of combustion and utilization known in the arts. But in these methods, according to standard authorities, at least five times as much of the fuel is utilized as in the average of stoves. The practical heating value of our domestic fuel may therefore be multiplied fourteen times (5×2.78) by using it to make water-gas.

But, again, the material actually used at Mount Vernon in making the water-gas analyzed by Professor Moore, instead of being our domestic fuel, worth from four to six dollars per ton in New York, was mostly nothing but waste coal-dust, dug up from an old "fill" where it had been used in grading the street ; and when the gas product itself is reapplied to making and superheating the steam—as, of course, it will be—the use of merchantable coal may be entirely dispensed with. Of the refuse dust we have literal mountains accumulated at our coal-mines and depots, as well as constant deposits at every coal-yard, which the proprietors would now be glad to have taken away gratis. Making ample allowance for the expense of appropriating these supplies of coal-dust, and allowing only the lowest price of chestnut coal for the article

consumed in our stoves and furnaces, we can multiply the present equivalent for our domestic coal bill at least three times more by the gas process—less the charges for invention and organization, capital and interest, manufacturing management, and distribution. The proprietors propose to have the fuel-gas delivered at fifty cents per one thousand feet, with a good margin of profit, as it can even now be made for ten cents. Compared with illuminating coal-gas by volume, its heating power is found to be about as three to five. Hence, coal-gas at eighty-five cents would be as cheap fuel as water-gas at fifty. But, in point of profit to the maker, the difference at these prices would be greatly in favor of the water-gas ; while, in another controlling matter, on the side of the consumer, it is not *malapropos* to say that comparisons are “odorous.” The mysterious but not agreeable smell raised by a coal-gas jet of the best air-mixing or total-combustion burner, when impinging on the surface of any cooking utensil (thought by Professor Wurtz to arise perhaps from a synthetic re-formation of gas) is a serious objection to coal-gas cooking, from which water-gas is absolutely free. Its combustion is perfect, without air-mixture, and without smell, “synthetic” or whatever. So far as the hydrogen is concerned, the product of combustion is pure aqueous vapor, in a quantity not likely to overcharge with moisture the atmosphere of the house. The other principal ingredient, thirty-six per cent. of carbonic oxide, becomes, of course, carbonic acid in burning, and must be conducted away.

Using a Goodwin’s gas-stove to its full capacity at once as baker, broiler, and boiler—simultaneously baking bread and potatoes, boiling other vegetables and coffee, and broiling steaks and chops, sufficient for a dinner-party of “experts”—Mr. Strong found the time thirty-minutes, and the consumption of gas thirty-two and a half feet, or sixty-five per hour. This (at fifty cents per one thousand feet) was three and a quarter cents per hour for the full running of the cooking apparatus, or one and five-eighths cent for cooking the entire dinner.

Turning from the domestic to the business arts, we encounter a prodigious revolution on the threshold with the incoming fuel. The gas-engine already referred to, as recently improved and extensively introduced under the German patents of Otto, supplants the steam-engine completely, on the small scale, even at the present high cost of coal-gas, and with certain other drawbacks peculiar to that somewhat tarry article. It is already available up to thirty horse-power, and at fifteen and under it is universally found a much cheaper source of power than steam, and

with gas of five times the cost and much less adaptability than the American water-gas. Thousands of these engines are used in England, and in London it is expected that steam-boilers with their smoke and danger will ere long be prohibited where the gas-engine is available. The "silent" gas-engines are also selling rapidly in America on the lines of rural and minor manufactures. What new stride this important substitution may take with gas at fifty cents and free of tarry ingredients, one hardly dares conjecture. But its absolute safety, automatic operation, and slight displacement, open to the gas-engine a vast sphere of common and household uses for which no motor had before been adapted. On the large scale, moreover, we may perhaps live to see such things as gas-locomotives, unburdened with coal or water, rid of their boilers, their annoying smoke, and their destructive sparks, and satisfied with picking up at intervals a plate-iron tender-car full of compressed water-gas.

In hope of closing with a sustained interest, the first actual and one of the greatest possible applications of the new gas-fuel has been left to be last mentioned—that of the manufacture of iron and steel, lately commenced in Sweden, under the American patents and the personal superintendence of a gentleman to whose inexhaustible energy and tact the American water-gas is largely indebted for its difficult yet brilliant progress—Mr. George S. Dwight, of Montclair, New Jersey.

Siemen's gas—a product saved from the combustion of coal in a furnace invented by that distinguished metallurgist—has long been used with admitted advantage in various branches of iron-working. With this well-known and standard form of gaseous fuel, Professor Moore's report, already quoted, minutely compares the American water-gas, showing that the former is many times more expensive and less efficient than the latter. In fact, water-gas made under all the old disadvantages of method is said to have been in use twenty years ago, at the Oldbury furnaces near Birmingham, England, and was introduced nearly as long ago in the Yorkshire blast-furnaces. It has also been used with marked preference in France, by workers in the finer metals particularly. Of the American water-gas, Dr. Moore says that its special advantages in metallurgy are, besides its great economy in cost and consumption, the high and easily regulated temperature it affords beyond all other fuel, and the relatively small volume of products of combustion evolved—being, in short, the most concentrated form of gaseous fuel hitherto available for such purposes. To which he might have added (if he had not been

at the moment confining his comparisons to gases) that its freedom from the impurities rise in mineral coals, and that greatly restrict the supply of iron fit for refining, seems alone sufficient to insure its substitution for all other fuel in the manufacture of iron and steel.

That Sweden has been first to move in this direction was natural, from peculiar circumstances. This pre-eminence of "Swedes iron" has been sustained under a singular disadvantage as to fuel. The country is destitute of coal, and pays a monstrous tax on that grand factor of its leading industry in the expense of importing it from England. On the other hand, it possesses inexhaustible stores of peat, which is well adapted to the manufacture of water-gas by the American process, and will henceforward supply the Swedes with that perfected form of fuel at a cost that will seem to them as nothing.

The operations now going on in Stockholm under the superintendence of Mr. Dwight were initiated by a semi-official body styled the *Jernkontoret* (or Metallurgical Association), which, under the patronage of the Government, pursues whatever investigations and experiments promise advantage to the grand interest of that country. Its voluminous published researches and reports are of standard authority in metallurgy all over the world. Water-gas making was commenced with American apparatus erected in the Atlas Works, Stockholm, in 1879, and the product applied to the treatment of iron-ores and the manufacture of steel. An official certificate of unqualified strength has been published under the signatures of leading Swedish and Russian metallurgists, and new works on a practical scale are now being established. The subject excited extraordinary interest throughout the intelligent classes of the nation. Preparations were also made to conduct the gas into various establishments and mansions for the purposes of warming and cooking. Orders have reached New York for fuel-gas works of the same kind in St. Petersburg, Russia, and preparations were making at the latest advices for similar movements in Austria and Bohemia, as well as to press forward organizations for the supply of American cities with both domestic fuel and manufacturing power in this form. The introduction of a ubiquitous motor (for the Otto silent gas-engine) as handy, cheap, and common as the ordinary gaslight, will mark a new era in industry, and prove an important new factor in political economy.—*From Popular Science Monthly.*

TRANSACTIONS

OF THE

ODONTOLOGICAL SOCIETY,

OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, February 2d, 1880.

ALFRED WOODHOUSE, Esq., President, in the Chair.

The Minutes of the previous meeting having been read and confirmed,
The President delivered the following Inaugural Address :

GENTLEMEN—Having been placed by you in the honorable position which I now occupy, let me in the first place most heartily thank you for the high honor you have done me in electing me your President—an office the worthy ambition of every member of our Society, as the highest honor that can be conferred by it, and one also which involves great responsibilities. These it shall be my pleasure, as it is my duty, to the utmost of my strength, to fulfill.

As I am the first President that has assumed office since our speciality has become a close profession, I think that I cannot occupy the present occasion better than by reviewing shortly its past history, tracing the steps by which it has reached its present position and contrasting the past with the standing it has now attained.

Before the memory of any of us—indeed, at a period of which there is no certain record—our speciality in England was always combined with other occupations. It is still so in other countries which are less advanced in civilization. As the knowledge of the organs which are our special care increased, and the skill to treat them became greater, people more frequently sought the aid of those who could relieve their sufferings, and men found it worth their while to devote their entire time to this special industry; and thus there sprang up among us those who were called dentists.

When I was articled, in 1842, the profession was well established, and for some years the names of certain practitioners had become household words with those who thought it worth their while to care for their teeth,

and who had experienced the benefit these men were able to confer, not only in relieving pain, but in preserving their failing organs. But each practitioner was isolated ; few knew their professional brethren, except by name or by their work in the mouths of wandering patients. There was no journal, no professional society, no medium of union, no general means of exchanging ideas, and each man was thrown almost entirely on his own resources. The professional literature of forty years ago, compared with that of the present day, was meagre indeed.

The only mode of education was by being articled to a dentist, general surgical knowledge being acquired by reading, and, if possible, by attendance at a general hospital. Those who coveted more extended knowledge, or a more recognized professional status, had to seek them in the curriculum of the Royal College of Surgeons, and the diploma granted by that corporation. But those members of our profession who voluntarily prepared themselves in this manner for their future duties were very few indeed.

In tracing the history of the past twenty years, the most eventful to our speciality, I have been greatly assisted by Mr Hill's admirable work, entitled "Reform in the Dental Profession," and I wish here to thank him for the aid he has thus given me, and to express the hope that he will complete the history, of which he has written so large a portion, by publishing a second edition, in which I trust he will continue the narrative, and so give us a complete history of our profession to the present time by registering the most important events of the last two years.

In 1841, Mr. Waite, anxious if possible to raise the profession from the low state in which it then existed, issued a pamphlet entitled "An Appeal to Parliament, the Medical Profession and the Public on the present state of Dental Surgery." In this appeal he recommended that young men seeking entrance into our profession should be required to pass through a course of study extending over not less than three years, in mathematics, chemistry, anatomy, physiology and surgery : that they should be subject to an examination conducted by examiners appointed by the Royal College of Surgeons (who should be specially empowered so to appoint and examine) ; and after their proficiency had been so ascertained and approved, that they should serve an apprenticeship to a dentist before being permitted to practice their profession. Although Mr. Waite occupied a good professional position, and although it was seen that if anything was to be done to raise the status of the profession

it must proceed on lines more or less resembling those suggested by him, his appeal met with no response. Like other pioneers, he was before his time.

In 1842, another effort towards the same end was made by Mr. James Robinson, who endeavored to form a dental society, to be followed by a scheme of education; but although he was a man of great energy, nothing came of it.

Next year (1843) Sir Robert Peel's Government brought a bill into Parliament, by which the charter of the Royal College of Surgeons would have been materially altered. This was considered a fitting opportunity for putting forward the claims of dentists for legislative recognition. Accordingly several gentlemen met at each other's houses, and after much consideration of the subject, it was resolved that Mr. Arnold Rogers and Mr. Stokes should wait upon the President of the Royal College of Surgeons and ascertain whether its promoters would consent to clauses being inserted in the bill providing for the recognition of our profession, and if not to urge that some steps should be taken to that end. They had an interview with the President of the Royal College of Surgeons, and though he did not receive them very warmly, he at length promised to support their application. Several meetings after this were held by about twelve of the leading members of our profession; a further correspondence took place between them and the Royal College of Surgeons; but in spite of all their efforts they had to abandon the scheme, for the bill did not pass.

For a few years subsequently to this effort, dental reform slumbered. Nothing of any consequence was noticeable until a letter from Mr. Rymer appeared in the *Lancet* in August, 1855. In it he described the condition of the profession, the sad lack of knowledge in many calling themselves dentists, the injury inflicted by such ignorant practitioners on their too-confiding victims, suggesting that the Royal College of Surgeons should appoint a properly constituted board of examiners, who should examine candidates for a license in dental surgery, and that in conjunction with this there should be a dental college where special instruction should be given. He instanced the success of similar colleges in America as a reason for a like good result in this country. This letter led to much correspondence in the medical journals, which, to a great extent, aroused the profession. When he considered the time had come for it, he inserted an advertisement in the *British Journal of Dental Science*, calling a meeting of the profession at the London Tavern, on

September 22d, 1856. On the appointed day, the large room was filled with dentists, most of them meeting for the first time. The first resolution advocated the formation of a society of dentists in which they might exchange ideas, and so promote advancement in scientific knowledge and brotherly feeling. The second resolution expressed the desirableness of establishing a system of education, to be followed by an examination, and that thus both the profession and the public might be benefitted. The third appointed a committee to carry the resolutions of the meeting into effect.

The result of this meeting was the formation of the College of Dentists which had an independent existence till 1862. The history of this movement I hope to revert to shortly, but must now consider another effort, in the result of which we are more directly interested.

Shortly after the writing of Mr. Rymer's letter, in December, 1855, eighteen gentlemen met to consider how best the interests of the profession might be advanced, and they came to the conclusion that the plan which promised most was to affiliate it to the Royal College of Surgeons. They, therefore, drew up a memorial addressed to the President of the Royal College of Surgeons, in which were described the unsatisfactory position of dental practitioners, and the desirability of an educational course being established under the supervision of the Royal College of Surgeons, to be followed by a special examination in dental surgery, as there was already in midwifery. No reply was received to this for more than a year, and these gentlemen felt the necessity for more extended and united action in the profession, and therefore decided to form a society which would bring the members of the profession together and enable them to take united, and hence more powerful, action in the direction in which they had hitherto unsuccessfully moved.

In November, 1856, they accordingly founded the Odontological Society under the presidentship of the late Mr. Samuel Cartwright. The first meeting was held at the house of Mr. Saunders, but they afterwards took place at the rooms of the Medical Society in George Street, Hanover Square, and here they found a home for about two years.

The Council of the Odontological Society in February, 1857, wrote to the President of the Royal College of Surgeons, reminding him that no answer had been received to the memorial sent to him, more than a year before, and requesting the consideration of it and the adoption of such measures as should be deemed most expedient to advance the condition of dental surgery in this country. The Secretary of the Royal College of Sur-

geons replied to this in about a month, stating that the Royal College of Surgeons was not in a position to grant special examinations, and advising that the Odontological Society should appeal direct to Parliament for the desired affiliation to that body. The Odontological Society, therefore, appointed a special committee to communicate its views to the Royal College of Surgeons, and a rather vigorous correspondence ensued between the two bodies, in which the views of each were fully stated, the result being that the solicitor of the Royal College of Surgeons drew up the following clause, which it was proposed to get inserted in a bill introduced by Mr. Headlam for the regulation of the medical profession, which was then before Parliament : " It shall, notwithstanding anything herein contained, be lawful for Her Majesty by charter, to grant to the Royal College of Surgeons of England power to institute and hold examinations for the purpose of testing the fitness of persons to practice as dentists, who may be desirous of being so examined, and to grant certificates of such fitness." On July 6th, 1858, in a Committee of the whole House of Commons, the above clause was introduced and adopted without one dissentient voice.

The first great step—that of legislative recognition, and consequently professional standing,—for which so many of our professional brethren had long struggled and worked, had now been reached, all difficulties so far had been overcome, and the Royal College of Surgeons had accepted its new responsibilities. A curriculum was next agreed upon. The Dental Hospital and School were established at first in Soho Square, by-and-by to be removed, in consequence of increased usefulness, to its present central and commanding position in Leicester Square. Thus the foundation-stone of our present position was laid, after much patience, perseverance and labor. I may here remark that the first diplomas of dental surgery of the Royal College of Surgeons granted under the new condition of things were given on the 13th of March, 1860.

But to revert to the College of Dentists. In 1856, that institution was established, the first President being the late Mr. James Robinson, who was, as we have seen, one of the pioneers in clearing a way for the present position of our profession. The principles on which the College of Dentists was founded were those of independence from the Royal College of Surgeons. It proposed to educate young men in its own school, grant its own diplomas and altogether exist without the pale of the Royal College of Surgeons. It was also a scientific society, having its monthly meetings, at which papers were read by its members and

other scientific men outside its body. It had its museum and library, and its quarterly journal of dental science. By the end of 1856, it had about 150 members.

As early as 1857, those who wished well to both societies tried to bring about an amalgamation, but after the terms on which they were to be united had been agreed to by delegates of the two societies, a meeting was held of the College of Dentists when the subject was fully discussed and the question at last put to the vote, when the project was negatived by a small majority, and thus the College of Dentists continued to have a separate existence for some years.

As in most societies, the College of Dentists had its difficulties and its successes, but the courage and perseverance of its promoters carried it through all its trouble. Although it had during three years unsuccessfully petitioned Parliament for a charter, it had successfully established its Metropolitan School of Dental Science with its adjunct, the National Dental Hospital, and had accomplished a considerable measure of success.

Thus the College of Dentists had progressed until the year 1862, no doubt stimulating our society by the emulation it caused, and thus hastening the success which crowned our efforts. The Royal College of Surgeons being now empowered to grant diplomas in dental surgery, it was evidently hopeless to expect the Government to grant a charter to the College of Dentists, and it was deemed desirable by its leaders to abandon that idea and seek amalgamation with the Odontological Society.

A meeting of four delegates from each society was accordingly held on December 22d, 1862, at the house of the late Mr. Arnold Rogers, and certain modifications of the by-laws were made so as to admit the members of the College of Dentists. The name of the Society was changed from the "Odontological Society of London" to the "Odontological Society of Great Britain," and other matters arranged which were necessary for the reorganization of our Society. On May 4th, 1863, the union of the two societies was practically consummated by 111 ordinary and 3 honorary members of the College of Dentists joining themselves to the Odontological Society of Great Britain.

Since that time our Society has gone on steadily progressing, gaining in strength and character, the papers read have been more scientific and not less practical, and our voice has been more respected in the medical world.

Thus, so far as our Society—as one of the professional societies of the kingdom—was concerned, we had reached a position where, in the opinion of many, we might “rest and be thankful.” But although a considerable measure of success had been gained, yet, both for the profession at large and especially for the public, much remained to be attempted and, if possible, achieved. True, it was possible for a young dentist to procure a thoroughly professional education, but it was still open to all and sundry, the charlatan and the illiterate, as well as the accomplished and trained professional gentleman, to enter the profession. Another great step had to be attempted, and if that were gained we might well deem that there had been placed the coping-stone on the edifice of dental reform. It was necessary that our calling should be raised by legislative enactment into one of the professions, and especially that for the future all members entering the profession should, like those of the allied professions of medicine and surgery, enter only by the door of a thorough professional education, tested by a thorough and complete examination, and then guarded by a thorough and compulsory legislation.

This most desirable condition of things has been brought about in the following way : On the 31st of August, 1875, a meeting was held in Manchester by some of those gentlemen who felt strongly in the matter, and the result was that a committee was formed, entitled “The Dental Reform Committee,” which set itself the task of getting an act passed which should compel all dentists already in practice to be registered, and after a certain period that all who registered should hold a diploma as licentiates in dental surgery.

The first committee held in London met at 11 Charles Street, on March 17th, 1878, when the Treasurer, Mr. James Parkinson, was voted to the chair, and on his declining to take the Presidentship, Mr. Samuel Cartwright was elected to that office. This was followed by many other meetings. Owing to differences of opinion on certain matters, changes in the composition of the council took place, and Mr. Tomes was elected chairman and Mr. Turner honorary secretary, in June, 1877.

“In the multitude of councillors there is wisdom,” so the Dental Reform Committee was the means of framing the plan and bringing the subject of reform to an advanced point ; but at last the business needed the work of a smaller body, which could move more quietly than an association of many members.

As you all know, it was resolved to appeal direct to Parliament, and

Sir John Lubbock, Sir Philip Egerton, and Mr. Gregory most kindly undertook to bring in our bill, and to fight it through all the delays, obstructions, opposition, and fatalities that beset the passing of a measure, however beneficial, in the hands of a private member. Fortunately, as you also know, the Duke of Richmond's bill was introduced by the Government at the same time, which, among other objects, proposed to deal with our profession. Yet it was a most delicate and difficult task to advance our bill and not clash with that of the Government, and naturally there was considerable cause for alarm as to its ultimate success.

The general scope and tenor of the bill having been decided by the Association, Messrs. Tomes and Turner were entrusted with the onerous and difficult duty of seeing it through Parliament. The Association was only to be called together when absolutely necessary. The bill was drafted with great care, its clauses carefully considered and carefully rearranged from time to time, to make them assimilate as much as possible with the Government bill. This was the work of Mr. Tomes and the hon. secretary.

At last, the bill having passed the Commons, had to be taken to the House of Lords, and there, fortunately, Lord Lansdowne undertook to "father" the bill, after having carefully gone over its clauses with the draughtsman, Mr. Fitzgerald, and his Lordship introduced the amendments referred to by Lord Sandon as a condition of his support when the bill was in the Commons, drawn up at the suggestion of the Government. The bill thus amended was supported by the Duke of Richmond and Gordon, and in him practically by the Government.

In Messrs. Tomes and Turner not only the Association, but the whole profession had all that could be desired. Mr. Tomes, to whom our profession has in other respects been so deeply indebted, had all the gifts necessary for pushing the business forward, in addition to well-earned leisure. And Mr. Turner was also equally able and devoted, sacrificing time, health, and everything that stood in the way, and rendered to Mr. Tomes invaluable assistance in the progress of the bill.

These gentlemen were incessant in their labors, now closeted with their legal advisers, now consulting with the members who undertook the bill in the House, either prompting the proposer of the bill, or interesting other members in it. And so, in ways it would take too long to enumerate here, it came to pass, as you all know, that through their instrumentality our bill became an Act of Parliament, while the Government bill became for the session a dropped measure.

“The Dentists’ Act,” of July 22d, 1878, has thus procured for us the privileges we enjoy. No longer isolated and without cohesion or recognition, we stand, for the first time as a profession, affiliated to the Royal College of Surgeons and its noble profession. No one can practice our speciality if he is not registered. If a dentist is convicted of crime or disgraceful professional conduct, he is liable to have his name struck off the register. We are freed from serving on juries. From this time no one can enter our profession who has not passed through a curriculum which ensures that he is at least well-educated and specially taught the practice of his profession. In short, we are now as exclusive a body as those of the Surgeons or Physicians.

From a notice of after-dinner speeches at a dentists’ dinner, which recently appeared in the *British Medical Journal*, it seems that an effort is likely to be made to deprive the licentiates in dental surgery of some of their privileges; but I feel assured the determination and energy which enabled us to obtain our privileges will be exercised successfully in retaining what has cost us so much.

Opposition failed in preventing the passing of the Dentists’ Act, and attacks upon it must again fail if we exercise the same activity and determination which carried it through.

Compare our present status with our condition thirty years ago, when we were almost ashamed of our name, and I am sure we must congratulate ourselves, and feel deeply grateful to those through whose exertions we are what we are.

But occupying this position, it behoves us to be worthy of it. Men formerly calling themselves dentists did what each thought was right in his own eyes.

Now, we are members of a corporate body, and we should each see that our professional conduct is such as is unimpeachable as professional men, each striving to act in the most honorable way, both towards his patients and his brethren.

Such is the state of our speciality by law, but laws without some one to enforce them are dead letters, and this to a great extent would no doubt be the case with the “Dentists’ Act” if there was no organized body to see to the enforcement of its penal provisions.

At a general meeting of the profession held at Willis’s Rooms on the 3d of March, 1879, it was resolved that an Association should be formed to see that the Act be properly carried out; that those who registered did so according to the meaning of the Act, and were *bona fide* members of our profession.

The members of the Dental Reform Association were requested to form the nucleus of the new "British Dental Association," other members being elected so as to make the Association thoroughly representative of the profession.

It will be the business of the Association to investigate the grounds on which alleged incorrect registration has been affected, and to obtain such evidence as may enable the dental committee of the General Medical Council to remove the names of those who have no right to be on the register. The work of this Association has yet to be done.

Springing out of the British Dental Association is a Benevolent Society, which will provide aid for those of our profession, or their families, who have become impoverished and need a helping hand. This Society is still in its infancy, but from its healthy birth promises to have yet a hearty manhood, full of good works.

I have occupied much of your time with general professional matters, but I felt that the members of the Odontological Society were of all dentists most interested in the progress of the whole body, and therefore I do not apologize.

But now as regards ourselves personally, let me express the hope that the session now begun may be a fruitful one. True, the routine treatment of our practice has been often well represented in papers read before this Society, but we cannot yet say that it is perfect; improvements are yet to be made even in routine work. The last thirty years have witnessed quite a revolution in our general practice. Let us hope that this year may see still further advancement in it.

But there are other collateral topics to be discussed: let us hope that some of our members may bring them before us. The microscope has much yet to reveal. Comparative anatomy may teach us much. And on many subjects we must all feel we have much to learn. Only the other day we saw that a plan of enabling the deaf to hear had been discovered in America. It consists of a peculiar kind of telephone, which is applied to the teeth, and through them conveys the vibrations of sound to the organ of hearing. Let us hope that a full account of this and other scientific novelties connected with our work may occupy some of the evenings of the session.

Gentlemen, I thank you for your attention to what I fear has been rather a dry address, but I felt that at this particular epoch I could not do otherwise than trace out our rise and progress from chaos to our well-organized state, leaving to you, gentlemen, to see that the goodly tree

which has passed through so many storms, and has needed so much careful culture, bears really good fruit.

The President announced that the following nominations had been approved by the Council and would be submitted to the general ballot at a subsequent meeting :

George Joseph Hongo, 15 Allez Street, St. Peter Port, Guernsey.

Maurice Hongo, 36 Belmont Road, St. Heliers, Jersey.

Hugh William Hughes, 10 Cavendish Place, Cavendish Square, London.

Lawrence Read, 18 Hanover Street, Hanover Square, London.

Messrs. Charles Noble, L.D.S. Eng., 1 Drayton Terrace, South Kensington, and Francis Ewbank, M.R.C.S., L.S.A., 24 Queen Anne Street, signed the Obligation Book and were formerly admitted to membership by the President.

The following candidates were then balloted for and duly elected members of the Society :

W. St. George Elliott, D.D.S., 39 Upper Brook Street, Grosvenor Square.

A. Baxter Visick, L.D.S. Ireland, D.D.S. Philadelphia, 41 Brook Street.

W. F. Thompson, M.D. New York and San Francisco, D.D.S. New York, 41 Brook Street, and

Morton A. Smale, M.R.C.S., 165 Edgware Road, Resident Members, and

Herbert Coate, D.D.S., Cheltenham, and

Martin Henry, L.D.S. Eng., 25 Cheriton Place, Folkestone, Non-Resident members.

Mr. R. H. WOODHOUSE showed a sequestrum which had been removed at the Dental Hospital in December last from the lower jaw of a woman aged thirty.

It extended from the left second molar posteriorly into the ramus of the jaw, involving the sockets of the second molar and of the wisdom tooth. No cause could be assigned for the disease, but the patient had suffered for nearly two years from intense pain, swelling and fixity of the jaw. As she was unable to open her mouth, except to a very small extent, nitrous oxide gas and ether were administered and the jaws forcibly separated. Mr. Coleman then extracted the second molar with a pair of hawk's-bill forceps, and the sequestrum, which had been previously ascertained to be

distinctly movable, was removed without much difficulty by means of the same instrument.

A complete section of the inferior dental canal, an inch in length, was contained in the bone removed. When the patient was last seen, fourteen days previously, the jaw had quite healed, except a small sinus near to the angle of the jaw. An attempt had been made, a few months previously, to remove the diseased bone by operation externally. The nerves in the teeth anterior to the first bicuspid were healthy. No caries in any of the teeth. The patient could move the jaw freely and masticate with comfort. Loss of sensation over a space the size of a shilling where the terminal branches of the inferior dental nerve are distributed to the skin of the chin.

Mr. W. E. HARDING, of Shrewsbury, then related the following case: A gentleman brought to him his son, eleven years of age; the boy's right central incisor projected above the level of the other teeth and was loose in its socket. Mr. Harding at once inquired if he had had a fall on the ice, but the boy declared positively that he had had neither fall nor blow. The tooth presented that peculiar dark opaque appearance indicating death of the pulp, and on more careful examination, Mr. Harding observed a small dark spot on its lingual surface close to the neck; this proved to be the opening of a minute canal communicating directly with the pulp cavity. On again questioning the boy, he said there had formerly been a small "knob" on the tooth in this situation, but one day he bit it off. A good deal of pain followed, and the tooth soon became tender and loose. It was evident then that a small node or cusp had grown on the tooth, and that into this node a horn of pulp had projected. When the latter excrescence was chipped off this prolongation of the pulp was exposed, inflammation of the whole pulp resulted, and then death of the tooth.

The President said it was indeed a very unusual case and he had never met with one like it. These little outgrowths were, of course, common enough, but the communication with the pulp cavity was certainly not common. Cases were occasionally met with in which death of the pulp occurred, although a very small amount of decay had taken place: he thought that possibly this might be due to an outlying horn of pulp approaching unusually close to the surface of the tooth. He thought also that a lesson might be learnt from this case, viz., that one should not be too ready to snip off these little projections, at all events in young subjects, lest death of the tooth should ensue.

MR. STORER BENNETT said that since the term node had a distinct specification in surgery, he thought it was scarcely appropriate to apply it to this growth. It was really an odontome seen at an early stage of its existence. We were in the habit of thinking of odontomes as solid tumors, and no doubt, as usually met with, they were so. Their method of development did not differ essentially from that of the normal parts of the tooth. In this case it consisted in the production of an unusual process of the normal formative dental pulp, on which a cap of enamel and dentine in due time appeared, and which would eventually have resulted in the complete solidification of the growth but for the accident which cut short its existence, and which happened at just that stage in its history when its structure consisted of a mass of enamel and dentine forming a tube in which was enclosed a process of pulp connected with that of the main body of the tooth. The little mass being broken off, of course exposed this tube, and so the whole pulp thus giving rise to the irritation, for the relief of which the patient sought assistance.

MR. F. WEISS said that MR. HARDING'S case reminded him of one which occurred in his own practice some years ago. It had been recorded at the time, but he would briefly mention the chief facts. A gentleman came to him complaining of great pain in one of his incisors. The tooth was not in the least diseased, nor had there been any projection as in MR. HARDING'S case; but on close examination a small opening could be seen on the surface of the tooth through which a fine horsehair could be passed into the pulp cavity. The opening must have been closed until shortly before the patient came to MR. WEISS, when symptoms of acute inflammation of the pulp set in; possibly the aperture had been covered with a thin layer of enamel and this had been lost by wear. MR. WEISS recommended that the opening should be enlarged and the pulp devitalized, but the patient, being impatient, went to another practitioner who removed the tooth, and MR. WEISS had afterwards an opportunity of examining it carefully.

MR. DAVID HEPBURN said that in the absence of any more important communication, he would mention a case which had come before him a few days previously. A young gentleman, sixteen years of age, fractured his left upper central incisor by a fall on the ice. The remarkable point about the case was that though the fracture was complete and not in the least impacted, and although the patient did not come to MR. HEPBURN till the day after the accident, the fragments were still so accu-

rately adjusted that he had to ask the patient to point out which was the broken tooth. The distal fragment was held in position partly by the nerve pulp and partly by some fine shreds of periosteum. Mr. Hepburn removed the loose fragment and the pulp, and then pivoted the stump in the usual way.

Mr. BROWN MASON, of Exeter, said a similar accident had befallen a patient of his, but it occurred in a much more extraordinary way. This gentleman had been playing billiards with a friend, and having finished their game they were amusing themselves with a little practice. Mr. Brown Mason's patient was in the act of aiming at the red ball when his opponent attempted a hazard off it, but, missing its aim, his ball struck the cushion, rebounded on to the point of his friend's cue, ran up it, and broke off two-thirds of the crown of his right central incisor. The pulp was exposed, and the same treatment was carried out as in Mr. Hepburn's case.

Mr. J. S. TURNER showed a lower canine of a most extraordinary shape; it resembled a partially straightened S; he had examined and cut up several thousand teeth, but had never before met with one so deformed. The tooth was dead, and he had assured the patient that its removal would be a very simple matter, but neither of them had found it so in fact.

(TO BE CONTINUED.)

BOOK NOTICES.

A TREATISE ON ORAL DEFORMITIES AS A BRANCH OF MECHANICAL SURGERY. By Norman W. Kingsley, M.D.S., D.D.S., President of the Board of Censors of the State of New York, late Dean of the New York College of Dentistry. With over 350 Illustrations. 8vo. Cloth, \$5.00; sheep, \$6.00.

During a number of years past, the writer has often heard expressed the wish that Dr. Kingsley would write a book embodying the results of his years of experience and his well-known talents in the direction of treatment of oral deformities. As appears from the above notice, this book has, at length been published. Most of the matter has appeared, from time to time, in the dental journals, in the form of papers read be-

fore the New York Odontological and other societies ; but its appearance in collective form, thoroughly revised, as it has been by the author, forms a prominent event in the history of dental literature. It is safe to say that, on the subject of the correction of oral deformity, no similar amount of experience, knowledge, prosthetic ingenuity and mechanical skill has ever appeared in print. The work is, in fact, unique.

The book contains twenty-one chapters, comprising the following main subjects : Part I. : Etiology; Correlation of Irregularities to Idiocy ; Diagnosis; Physiology and Pathology ; Mechanical Forces used in Regulating Teeth ; Impressions and Models; Cases from Practice in Regulating Teeth. Part II. : Congenital and Acquired Palatal Lesions ; History of Obturators ; Appliances for Acquired Palatal Lesions ; History of Artificial Vela ; Treatment of Congenital Fissure of the Palate ; Method of Making Artificial Palates ; Introduction and use of Artificial Vela ; Buccal and Nasal Prothesis. Part III. : Location, Diagnosis, etc., of Maxillary Fractures ; Interdental Splints. Part IV. : Physics of Sound; Formation of Vowels and Consonants. Part V. : Art Culture Required in Dental Prosthetics ; Anatomy and Physiology of Expression.

Of all these, want of space forbids any extended review, while admiration often disarms criticism. It is true that Dr. Kingsley has not allowed much space for the latter, through the clearness and convincing character of his proofs on disputed points, and the ingenuity and simplicity of his methods. His chapters on the etiology of dental irregularity are especially valuable. The fallacy of Salter's theory of "selective breeding" is clearly shown ; so clearly, indeed, that one is tempted to wonder how it was ever possible to suppose that abnormality should result from the very means always taken to secure perfection in physical structure. Also, the relations between idiocy and dental irregularity are fully discussed, and the conclusions arrived at are, mainly, diametrically opposite to those heretofore somewhat generally held—not, however, without cause. The theory subscribed to by Dr. Kingsley as to the domination of the fifth pair over the development of the teeth, and thence, by correlation, the coincidence of the mental development with the dental, finds its natural and perfect expression in the facts that normal dental growth and position are coincident with a retarded mental growth, and *vice versa*. His declaration (Chap. I.) "that the next generation will see more of abnormality in dental development, and an increase of nervous and cerebral diseases, and that the two are correlated and spring from the same cause," is a remarkable one, which the rising

generation of dental practitioners will remember with interest. The writer does not hesitate to join his voice to that of Dr. Kingsley in the prophecy.

In the chapters on the treatment of dental irregularity, while we are compelled to admire the author's methods, still some will differ from him, in some instances, as to applications to produce required results. Many will not be inclined to give to the screw the position and value given it by Dr. Kingsley. Also, the writer notices that metallic *springs*, flat or coiled, find no direct mention in the author's resumé of appliances for dental movement. These he has himself found very valuable, as being often capable of use where other means would be either cumbersome or inapplicable; and, finally, the subject of *retaining plates*, as such, has been somewhat slighted, and no mention has been made of the *wire retaining frame*, an appliance of equal value with a plate for retaining purposes, while vastly superior to the latter in appearance, comfort and cleanliness. These considerations assume much importance when it is remembered that retaining apparatus has often to be worn for a long time, the patient meanwhile visiting the dentist but rarely.

The history of obturators and artificial vela is interesting, and is remarkable in the respect that it shows so little *variety* of invention in these appliances. The principles of Delabarre, Stearns, and Kingsley are the only real steps of much importance taken during a period of about sixty years. Considering the principles evolved, and the duration of time between each of these steps, the artificial velum of the author is a remarkable invention; since it seems to have been perfected at once, and as a whole, instead of having been, as is usual with all valuable improvements, the result of many little additions to an original idea. And the writer considers that not the least remarkable feature in this invention is the possibility, owing to its peculiar construction, of keeping artificial vela "in stock" like porcelain teeth.

The chapter on buccal and nasal prostheses should be a significant one to those who have sneered at the possibility of the dentist's succeeding in such cases. Deformities either utterly incapable of remedy at the hands of pure surgery, or, at best, to be only palliated by the knife, are shown to be capable of entire correction by the intelligent oralist. These performances, in fact, raise what is disdainfully termed *mechanical* dentistry to a much higher level than the purely "operative" department. In

general surgery, the prosthetic department has never even aimed to attain such heights of excellence as are quite within the reach of prosthetic dentistry.

We heartily agree with our author, that "this ignored and despised branch of dental practice" (the prosthetic—a term much preferable to *mechanical*) "is capable of high idealization, taking rank with sculpture and other branches of fine art."

The writer does not hesitate to express his belief that the chapters on the "æsthetics of dentistry" will be found of more *practical* value to the prosthetic dentist than all the other essays on this subject existent in the English language. His dental reading has been large, yet his memory holds exceedingly few examples of anything but the most general and vague expressions in this regard. What the author styles "the discussion of ideal or imaginative subjects," has seemed to be the only aim of essayists upon dental æsthetics. The matter has evidently appeared to hold in the minds of former writers, some vague connection with the occult. "Poetic exaltations of dentistry," learned (but vague) allusions to Lavater and physiognomy, and the ever-recurring, yet never-explained, reminders as to "harmony," constitute the bulk of the literature in question. But Dr. Kingsley has lifted the veil and shown us the "mysteries of Isis." He has made practical what has generally been rendered mysterious; and for doing so he deserves the thanks of every struggling aspirant to the honors of prosthetic dentistry. One might wish for more of examples and illustrations in these chapters, it is true; but this desire arises, not so much from any paucity of these in the chapters, as from eagerness to behold more of a field so new to most, and so interesting and valuable to all.

Space has compelled the writer to pass over many topics upon which he could have wished to enlarge. In fact, one of the chief characteristics of this work is its suggestiveness. A perusal of its pages seems to compel the mind to advance in directions variously indicated; so variously, indeed, that there is hardly a page of the book which does not contain some important truth, some pregnant hint, or some valuable conclusion. It is, on this account, an extremely difficult book to review, without the reviewer incurring suspicion of gross partiality. But the writer fears this criticism only from those who have not read it.

J. E. D.

UNIVERSITY OF PENNSYLVANIA—DEPARTMENT OF
DENTISTRY.

At a public commencement held Monday, March 15th, 1880, at the American Academy of Music, the degree of Doctor of Dental Surgery was conferred by Charles J. Stillé, L.L.D., Provost, upon the following gentlemen; after which an address was delivered by Harrison Allen, M.D., Prof. of Physiology:

Name.	State.	Name.	State.
Allen, C. Alban,	Penn.	Lopez, Diego,	Cuba.
Byran, William H.	Mass.	Matthews, William G.	Penn.
Croney, Henry D.	West Indies.	Mora, Henry,	France.
Curtis, George L.	Mass.	Morrison, Frank B.	Penn.
Davenport, Lewis C.	Iowa	Newton, J. N. P., L.D.S.	Eng.
Easton, Daniel F.	N. Y.	Nieriker, Hermann	Switzer.
Hayden, Henry B.	Mass.	Portuondo, Ramon H.	Cuba.
Hertz, George E.	Penn.	Rice, Frank R.	Mass.
Huntley, John P.	Ga.	Smith, Pratt J.	Penn.
Klump, John A.	Penn.	Weston, Edward C.	Penn.

SUMMARY.—Cuba, 2; England, 1; France, 1; Georgia, 1; Iowa, 1; Massachusetts, 4; New York, 1; Pennsylvania, 7; Switzerland, 1; West Indies, 1. Total, 20. Number of matriculates, 77.

The following named gentlemen were the successful competitors for the different prizes offered:

E. C. WESTON, Philadelphia.—A set of instruments, offered by S. S. White, D.D.S., for the best essay.

Theses of distinguished merit were also presented by John A. Klump, Penn.; Ramon Portuondo, Cuba; John N. P. Newton, L.D.S., England.

E. C. WESTON, Philadelphia.—A prize of a dental engine, offered by S. S. White, D.D.S., for the best specimen of plate work.

W. G. MATTHEWS.—A prize of \$50, offered by Prof. C. J. Essig, for the best specimen of platinum work.

At the examination of the second class for degrees, honors are awarded to E. C. Weston, Philadelphia; John N. P. Newton, L.D.S., England; W. G. Matthews, Philadelphia.

BALTIMORE COLLEGE OF DENTAL SURGERY.

THE fortieth annual commencement of the Baltimore College of Dental Surgery was held Thursday, March 4th, 1880, in the Academy of Music, Baltimore. The conferring of degrees was by Prof. F. J. S. Gorgas, Dean. The valedictory address was made by Gen. Bradley T. Johnson, and the class address by Burrows Nelson. The following is a list of the graduates for 1880:

Name.	State.	Name.	State.
C. J. Barber,	N. Y.	A. B. King,	Md.
B. A. Barrett,	D. C.	A. Leeds,	Md.
J. D. Basehore,	Penn.	F. P. Lewis,	Penn.
J. S. Billopp,	Md.	B. Nelson,	D. C.
J. H. Burnett,	S. C.	C. H. E. Obermuller,	Germany.
O. F. Coe,	N. Y.	J. C. Oeland,	S. C.
F. H. Cole,	N. Y.	E. T. Payne,	N. Y.
P. A. Cooke,	South Am.	S. A. Peden,	Penn.
H. V. Desportes,	S. C.	J. A. Peirce,	Va.
J. W. Foreman,	Va.	M. Pirkey,	Va.
J. W. Gorden,	Md.	J. M. Quattlebaum,	S. C.
Milton H. Gross,	Penn.	H. L. Rankin,	Va.
Wm. T. Harban,	Md.	A. V. Robbins,	Penn.
J. S. Hartman,	Va.	J. R. Smith,	S. C.
Wm. Hawkins,	Tenn.	M. F. Thompson,	D. C.
G. L. Hills,	D. C.	L. A. Thurber,	La.
N. A. Hollinshead,	Ga.	J. H. Twyman,	Ky.
B. M. R. Hopkinson,	Md.	J. N. Van De Water,	N. Y.
L. C. F. Hugo,	D. C.	L. G. Wietfeldt,	Germany.
T. M. Hunter,	N. C.	J. L. Wolf, M.D.,	D. C.

The honorary degree was conferred on Thomas Brain Gunning, New York.

No. of matriculants during session, 73. No. of graduates, 40.

Prizes were awarded to : Thomas May Hunter, of Enfield, N. C., for highest No. of votes at final examinations ; to Louis C. F. Hugo, of Washington, D. C., for best appliance and thesis for Correction of Irregularities of the Teeth ; and honorable mention of Nathaniel A. Hollinshead, of Fort Valley, Ga. To Thomas May Hunter, of Enfield, N. C., for best clinical operation of filling ; honorable mention of J. Ryerson Smith, of Williston, S. C. To Thomas May Hunter, of Enfield, N. C., for best piece of metal-plate work.

BOSTON DENTAL COLLEGE.

The twelfth annual commencement exercises of the Boston Dental College were held Wednesday evening, March 3d, 1880. Conferring the degrees was by the President of the College, I. J. Wetherbee, D.D.S. Awarding the prizes, by the Dean, E. Chenery, M.D. The valedictory, by Lyman C. Bryan, D.D.S.; an address by Rev. J. L. Withrow, D.D.

The following is a list of the graduates, class of 1880:

Name.	Residence.	Name.	Residence.
Geo. Taylor Baker.....	Chelsea	B. W. Leonard.....	Cambridge, N. B.
William Barker.....	Providence, R. I.	T. Mathewson Mitchell.....	Taunton
Lyman Curtis Bryan.....	Boston	James Joseph Mulloy.....	East Boston
John Calder.....	Victoria, B. C.	Alvah T. Newhall.....	Salem
James Harlow Daly.....	Boston	Hiram Edward Truell.....	Lawrence
Henry Herbert Gage.....	Charlestown.	Samuel L. Wellington....	Northfield, Vt.
C. Haywood Haynes.....	Dexter, Me.	Cassius E. Whinnery.....	Salem, O.
H. Dwight Hickok.....	Wells River, Vt.	Eben M. Wilson.....	So. Woodstock, Vt.
Wm. Henry Hollis.....	Cambridgeport	H. A. Woodbury....	Council Bluffs, Iowa
W. Lamb, M.D. (Univr. Penn.)....	N. J.	Burten C. Russell.....	Class of 1879

The following persons have passed the Faculty, but have not yet completed their three years' pupilage:

Name.	Residence.	Name.	Residence.
Aaron Hill, Jr.....	Stoneham	Warren N. Fairbanks.....	Boston
Walter Marcellus Lamkin.....	Lynn	E. P. George...	Frankfort a M., Germany
Jas. E. Quinn....	So. Newmarket, N. H.	John Edwin Graves.....	Groton

ALUMNI ASSOCIATION OF THE BOSTON DENTAL COLLEGE.

At the annual meeting of the alumni of the Boston Dental College, held at the College March 3, 1880, the following were elected officers for the ensuing year: President, Dr. William P. Leavitt, Boston; First Vice-President, Dr. Lory B. Henderson, South Boston; Second Vice-President, Dr. William Barker, Providence, R. I.; Secretary, Dr. Edgar O. Kinsman, Cambridge; Treasurer, Dr. George C. Ainsworth, Boston; Executive Committee, Drs. C. H. Osgood, N. N. Noyes, of Boston, and T. W. Clements, of Brookline. E. O. KINSMAN, Secretary.

OHIO COLLEGE OF DENTAL SURGERY.

The thirty-fourth annual commencement of the Ohio College of Dental Surgery was held at College Hall, Cincinnati, Wednesday evening, March 3d, 1880. The conferring of degrees was by G. W. Keeley, D.D.S., President of the Board of Trustees; remarks and awarding of prizes by Prof. H. A. Smith; the valedictory address by M. S. Dean, D.D.S., of Chicago, and the class oration by E. A. Galbrath, D.D.S.

The following is a list of graduates:

Name.	State.	Name.	State.
Ira Athern,	Ohio.	H. L. Millikin,	Ohio.
Will B. Ames,	Ohio.	W. S. Myers,	Ind.
David Arter,	Ohio.	W. P. Merrill,	Ind.
John O. Bockstoce,	Penn.	W. C. Nesbitt,	Ky.
F. O. Brake,	Ohio.	S. W. Poland,	Ohio.
J. M. Clyde,	Ky.	Miss Annie Riley,	Ohio.
G. M. Cole,	Penn.	A. J. Richter,	Wis.
M. H. Fletcher,	Ind.	C. M. Richey,	Ind.
Hubert H. Gott,	Ohio.	E. H. Steckman,	Mo.
W. M. Garnett,	Ky.	C. H. Snyder,	Ohio.
E. A. Galbrath,	Ohio.	S. S. Street,	Ohio.
John W. McGarry,	Ohio.	G. W. Sparrock,	W. Ind.
A. N. Hauck,	Penn.	B. W. Wikoff,	Ohio.
R. L. Hyde,	Ohio.	C. T. Wiant,	Ohio.
A. W. Harlan,	Ill.	Samuel Young,	Tenn.
John M. Martindale,	Minn.		

ROYAL COLLEGE OF DENTAL SURGEONS, ONT.

The twelfth annual examination, held in the city of Toronto, Ont., was concluded on March 5th, 1880. The examination being entirely written, no thesis was required. During the session of 1879-80 there have been thirty-three students in attendance on lectures. License to practice dentistry in Ontario and the title of L.D.S. (Licentiate of Dental Surgery) was granted to the following gentlemen, viz.: J. D. Schunck, Richmond Hill, Faculty Gold Medalist; H. A. Wilson, Wardsville, College Gold Medalist; John Mills, Brantford, College Silver Medalist; John H. Gordon, Elora, Fourth Honor Man; H. B. Weagant, Cornwall; E. P. Cornell, Stratford; J. H. Farrington, Norwich; H. A.

Parker, Gananogue ; P. C. Creggan, Kingston ; Geo. Shephard, Collingwood ; W. E. Tunis, Hamilton ; J. G. Sutherland, Alliston ; J. F. Taylor, Campbelford : Allan Cameron, M.D., Owen Sound.

NEW DENTAL ORGANIZATION.

To the Editor of the Dental Miscellany :

In response to an invitation circular sent to all the prominent dentists of Hudson, Essex and Union Counties, New Jersey, some thirty responded by being present at the office of Dr. W. Pinney, Newark, on Thursday evening, February 26th, and formed a society for the general advancement of the profession in the counties named. A constitution and by-laws were adopted, and permanent officers, as follows, elected : President, Dr. D. C. McNaughten, Jersey City ; Vice-President, Dr. Worthington Pinney, Newark ; Secretary, Dr. G. Carlton Brown, Elizabeth ; Treasurer, Dr. Chas. A. Meeker, Newark ; and an Executive Committee of five, as follows : Drs. James C. Clark, Jersey City ; F. Barlow, Jersey City ; E. F. Hanks, Jersey City ; F. A. Levy, Orange ; J. C. Hanks, Newark. The new association starts off with many wishes for its success, and, no doubt, will soon take a prominent position in local dental organizations.

G. CARLETON BROWN,
Secretary.

GEORGIA STATE DENTAL SOCIETY.

The twelfth annual session of the Georgia State Dental Society will be held in the city of Atlanta, commencing on Tuesday, the 11th day of May, 1880, at 10 A. M.

L. D. CARPENTER, Cor. Sec.

KANSAS STATE DENTAL ASSOCIATION.

The next regular meeting of the Kansas State Dental Association will be held at Emporia, Kansas, on first Tuesday in May, 1880. Reduced rates at hotels for those in attendance. An unusually interesting meeting is anticipated, and members of the profession throughout the State are cordially invited to be present.

R. I. PEARSON, Secretary.

ARS BENEFICA.

Weave choicest of songs for the man with the prongs,
 Who hushes your aches and your pains,
 And e'en if your torment his pocket prolongs,
 Oh ! who shall begrudge him his gains ?

A single purgatorial hour,
 Followed by hours of ease,
 Since to give this is in his power,
 Dare we dispute the fees ?

Hell's gaping cavities of woe
 Are by his finger stilled—
 The leaping pain becomes more slow,
 The agony less wild.

Then darkened surfaces grow white,
 Seraphically pure,
 Till ev'ry smile's serene delight
 Our raptures doth allure.

Till cherubs seem to circle us,
 With halo'd, pearly mirth,
 And, hedged by gladsome galaxies,
 We ask, "Can this be earth ?"

Then. Dentist, since thou willing art
 To grope 'mid ashes dead,
 And bones of feasts that made a part
 Of our own Past long fled,—

With freshest laurel will I crown,
 Thy thankless toil severe ;
 Thou drawest Heaven's laughter down
 In place of mortal fear.

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*May, 1880.*—No. 77.

OFFICE BOY'S DENTAL COLLEGE.

BY W. H. ROBINSON, D. D. S., SUISUN, CAL.

No dentist has a stronger fatherly feeling for that unfortunate class of youth which is represented in the average office boy of the dentist, than the writer. I want to emphasize this, because some things I say may look a little uncharitable toward them.

In a certain city, in an area of ten blocks there are forty dental offices. Thirty of these offices have thirty-three office boys. Two or three of the remaining ten are just now minus office boys; not from choice, but their boys have just graduated, and opened offices for themselves. The office boy is usually a shrewd, industrious boy, and as a rule so poor that his poverty deprives him of even common school advantages, and forces him in early life to earn his living, or perhaps help to support a widowed mother. The average office boy is worthy of the assistance and confidence of his employers.

When a young dentist starts in professional life, for a few years he has up-hill work, little business, low finances. Perhaps from one-half to one-third of all who enter the profession always find business dull and finances low. This class seldom require or have office boys, but nearly all dentists who have a good business, and many irrespective of business, require an assistant to mallet, etc. As only the dentists with a good business, as a rule, have office boys, these boys conclude that all dentists have a good business, and that dentistry is a good business to make money at. As one put it: "Old Doc" says I mustn't think of being a

dentist—guess he thinks I'm green. Something a feller can make twenty to fifty dollars a day at is a fat take and I am in for it." The boy judges correctly from what he sees. He knows nothing of the years of dull business and up-hill work his preceptor had. I say preceptor, meaning what I say. Every dentist who employs an office boy, is in fact that boy's preceptor. Of course, most of you say that you are not his preceptor. It is true you have not gone through the form of contract you do with a regular student, but you have a student all the same. These boys see the bright side of dentistry. Most of their employers have nice offices and good paying practices. Most of the boys see in dentistry a nice, paying business within their reach. About three-fourths of them resolve to become dentists. At least one-half of them do become dentists. When we once made this statement in an association, a dentist present answered : "Supposing most of the office boys do become dentists. What are you going to do with them—kill them?"

We cherish only the kindest feeling to the boys, and do not blame them for taking a short, cheap cut into the profession. Were the practice of dentistry the social and financial success it appears to the office boy, he would do well to make an heroic effort to enter it. I here make an assertion. My closest observation convinces me beyond a doubt it is true : That more dentists are now coming into the profession through the office boy door, than in all other ways combined. It is the shortest, cheapest, easiest, and most traveled road. No doubt some of these who come in by this road become good, practical dentists—a few, scientific dentists. But unfortunately for the boys, their poverty has kept them from school, and few of them have any education or will ever get any but the practical ideas they pick up in the office, as many enter the office when from twelve to sixteen years old. They are soon taught to help the dentist, and in a year or two rank as plate workmen in their first or subsequent employer's office. A few go to a dental college, and manage to have their office boy time fulfill that pre-requisite of graduation : "He must have pursued professional studies two years under some *competent instructor*." But as a rule the office boy takes a short course—one or two years as office boy, one or two as assistant, and then he is a dentist.

Or rather we should say the office boy college has 5,000 students, their time of study about four years; so this college every year graduates about 1,000 dentists. As dentists, they are very apt to make what they regard as a financial success. Poverty has deprived them of educational advantages; kept them in ignorance, compelled them to "hoe their own

row" in early life. As office boys and assistants, they paid their way, and a very meagre practice is a desirable transition from their struggle with early poverty. We admire their pluck and energy, and as the profession is open to them, we wish them well, and yet have to ask ourselves is it best for the boys? Usually their youthful training, lack of schooling, and their early habits have poorly prepared them for professional life, if intelligence, education and scientific attainments are any prerequisites. As a class, these office boy graduates are energetic and able to take their part in the battle of life. In the turmoil of general business, many of them that starve as ignorant dentists would amass fortunes, and achieve grand financial successes. There are already in the profession twice as many dentists as can make a competent living; yet our colleges give an annual supply of about four hundred more. No danger of there being a "corner" in the supply. A host of office boy graduates, that make a failure at dentistry, have the tact and training for success at general business.

The influence of the office boy college on the profession is that numerically it rapidly increases it. This increase, as a rule, have no education, mental discipline, or scientific knowledge, but are shrewd business men, who are apt to regard dentistry as a business to make money out of. (They are not the only ones who do this.) How shall I answer my friend's question? "What are we going to do with the office boys—kill them?" I say "no." My sympathies are with the boys. But I say to our dental colleges, shut your doors. The office boy college puts into the profession every year about two thousand shrewd, illiterate dentists. The professors in this college are eight or ten thousand of the first dentists in the profession. Ordinary colleges, no matter how low their fees or intellectual standard, can't compete with the office boy college. It gives tuition free, and, better still, bed, board, text-books, and pocket money to all who attend, and requires no such superfluities as: "The candidate must be twenty-one years of age, and have a good moral character," or "Must have a common school education, and have spent two years with a preceptor." No wonder this is the great highway into the profession now. The faculty of this college are men eminent in the profession. They make reports on Dental Education at our associations; tell our colleges to raise their educational requirements, and write fine essay son dentistry being a "learned profession," not a mere "mechanical art." The faculty of this college issue a weekly announcement, as follows: "Wanted, another office boy. Mine has just left me and opened an office of his own." A few decades

ago the earnest, intelligent men in the profession saw how dentistry was degraded by the system of private pupilage then in vogue that purported to make dentists in a few months—from any kind of raw material. The noble efforts of these earnest leaders gave us our present dental colleges. The principal fault we find with them is that their education requirements are too low. But no matter how justly they may merit censure in this respect, their requirements are far in advance of the crowd who come into the profession every year through the office boy college. This is the most degrading incubus that the dental profession has ever labored under. It is cursing the profession and the world by filling them with shrewd, ignorant quasi dentists. I admit it is difficult to devise a remedy while thousands of dentists that stand in the profession are financially interested in maintaining this system.

Whatever influence our dental societies may have in enforcing rules to regulate the conduct of members in receiving students is nullified by the office boy system. The highest professional attainments and intelligence offered to the public, according a proper system of ethics, are often outstripped by shrewd quackery and brazen ignorance. We would like to hear the views of some of the professors in the office boy's college who graduate about two pupils every three years.

DENTAL CARIES.

BY DR. LOUIS R. EBERT, OF RIO DE JANERIO.

The destruction of tooth substance is attributed to acids and leptothrix by Magitot Leber and Rottenstein, etc. There are authors who also attribute dental caries to an animated cause, producing to teeth and organs necessary to health, sad ravage and pain. Now, the true cause of dental caries not having been as yet thoroughly elucidated, becomes to all interested a subject of minute observation and close study. Having lately devoted much time to serious research in this direction, we find ourself more and more confirmed in the belief that there exists *in certain cases of caries* an animated agent, microscopic in size, and having mandibles.

There is a special species attacking the necks of the incisors, eye teeth, bicuspids, and sometimes, but very seldom, in the lower jaw. This latter

decay is certainly caused by an acid coming from either the secretions of the mucous membrane or the parotid glands, having no coloration, and the caried part bears exact resemblance to that placed in a tooth in acids ; the march of the decay proceeding internally as well as superficially, having a regular border and entirely free tooth particles.

The point of attack for caries, to whose cause we attribute an animated organ, is first perceptible by a small dark point in the slight hollow on the labial surface of the molars in the interstices of their grinding surface as well as those of the bicuspids, in the marked groove of the upper incisors on the palatine surface ; between the teeth, where food remains lodged, and which, in the stage of fermentation and decomposition does not produce enough of acid, but certainly enough of vibrios, etc., to produce damage, while seldom if ever will decay begin on the lingual surface of the lower maxillary, while sometimes the second molar of the upper jaw will have the point of commencement on the palatine surface, which proves clearly that acids are not exclusively the cause. The liquids of the mouth cannot find a spot of attachment, because kept in constant circulation by the natural movement of the tongue muscles and cheeks.

It remains yet for the microscope of superior power to the one employed by Leber and Rottenstein to prove that his leptothrix are but adjuncts instead of causes of dental caries.

The opinion expressed by Raspail on dental caries is far from being exaggerated in that which concerns their cause, formation and aspect, and comes in to justify our preceding assertions in regard to caries of the molars and bicuspids, showing clearly to the observer its point of attack where the tongue cannot reach it and where it cannot be crushed by the antagonizing teeth in the labor of mastication ; then quietly and safely proceeding in its work of destruction, fully protected, it perforates internally in the direction of the nerve, hollowing out the tooth, leaving untouched the walls of enamel that by accident and mastication crumble down, displaying to the surprise of the owner an immense cavity that had been forming without attracting his attention in the slightest degree. Daily do patients call on us expressing surprise at a tooth having been crushed in or at one which all of a sudden gives them intense pain.

As regards the small worms, of which Scribnus Largus treats, and which seemed to have been seen by Bremer and Brera in the saliva expectorated by persons suffering from odontalgia and in those to whom they gave narcotic plants to inhale, they are probably the same of which Ficinus speaks, who attributes dental caries to a putrefaction produced

by small infusoria living in the mouth and found in large numbers in the tartar that covers the teeth. It is more probable, we think, that these infusoria and vibrons have nothing to do with caries, but help to form the salivary calculus that, according to Mandl, is composed of calcareous carapaces.

According to observations that we have made, the destructive agent makes its way internally at the points of which we have already spoken. Nature furnishes us analogous instances of work by a certain class of mollusks that perforate the hardest of rocks, either by a corrosive or perforating power. As to the disappearance of the calcarious salts of which some authors speak, we again find like agents in nature, not only plants but sea animals, which make it their nutritive element. It may be that this agent, when once in the pulp chamber, extracts voraciously the jucies needful for his sustenance, and causes odontalgia, which those suffering from it often describe as something gnawing and biting the nerve.

Before the work of destruction has gone far, the cavity is found full of small microscopic particles, which clearly show that they have been detached, and fall on the tongue or napkin in a perfectly dry state. This would be otherwise if they were produced by acids. These particles are not produced by the excavator nor bur, and certainly no work of disorganization can produce them.

There arrives a stage in the disease, however, as we have already observed, when the walls of the tooth, partially or entirely hollowed out, break in, giving full ingress to the fluids of the mouth, and then the acids play an active part, aiding frightfully in the work of destruction and changing the aspect of the cavity.

Van Beneden tells us clearly in his work, "Commensaux et Parasites," that neither the brain, ear, eye, heart, blood, lungs, nor the spinal marrow, nor the nerves, nor the muscles, not even the bones are exempt from attacks of parasites.

Now, could the teeth be the only organ in the human frame excepted from the attack of parasites? Certainly not; for, by their mere form, position and contact with parasite forming agents they are more subject than any other organs. At different times examinations have been made, by men in the profession, on caries produced on teeth placed in jars in which were liquids and substances that produced caries similar to those found in the mouth. We cannot accept these results as conclusive, for a tooth thus exposed is not in its normal state and cannot offer the same points of observation; nor can it be compared to a tooth placed with its

companions in the oral cavity, constantly subjected to sudden thermal changes, constantly in contact with liquids more or less charged with acid or animal life, having a living nerve-giving life, by means of the analculi, and which may, by the mere supply of poor or vitiated blood, transmit but feeble elements for its strength, thus offering less resistance to the attacking agent. Persons having soft teeth have them far more decayed than persons of sound, hard teeth, having the same elements and liquids for food and drink.

The observations on dental caries must be made *seance tenante* or immediately after extraction, which operation, fortunately for the patient, is only resorted to when the tooth is all destroyed or too far gone for the minute research so necessary in the first stage of its destruction.

We are often very much surprised at the rapidity of decay in some teeth while other teeth in the same mouth remain intact. Why is this? Are they not continually bathed by the same secretions, subject to the same thermal changes? And if the cause of decay be acid, not one but all the teeth would be more or less attacked.

Science having clearly proved that nearly all our organs are subject to the attacks of parasites, we are more and more convinced that the teeth are not exceptions, especially as we have, in our late researches, found what appears to be the destructive agent lodged in the cavities, of which we have made mention.

But one cannot continue this subject, on which so much has been said and so much labor expended, without the presentation of unrefutable results, without more perfect instruments.

UNIVERSITY OF MICHIGAN.

At the Annual Meeting of the Alumni of the Dental College of the University of Michigan, held at Ann Arbor, March 24th, 1880, the following officers were elected for the ensuing year :

President, W. H. Dorrance, Jackson, Mich. ; Vice-President, F. O. Gilbert, Bay City, Mich. ; Secretary, B. F. Miller, Flint, Mich. ; Treasurer, T. S. Ewing, Dexter, Mich. ; Executive Committee, Drs. Jackson, Ann Arbor ; Dorrance, Jackson ; and Miller, Flint.

B. F. MILLER, *Secretary.*

19th ANNUAL SESSION
OF THE
AMERICAN DENTAL ASSOCIATION.
HELD AT NIAGARA FALLS, AUG. 5TH, 6TH, 7TH AND 8TH, 1879.

3d DAY—MORNING SESSION.—(CONTINUED.)

The President appointed the following gentlemen as Committee on Directory, under the resolutions presented by Dr. McNaughton :

D. C. McNAUGHTON, chairman, Jersey City, New Jersey; Maine, Thomas Fillebrown; New Hampshire, Vermont and Massachusetts, M. E. Paige; Rhode Island, C. A. Brackett; Connecticut, J. McManus; New York, S. A. Freeman; Delaware, J. E. Register; Pennsylvania, G. W. Klump; Maryland, F. J. S. Gorgas; District of Columbia, R. Finley Hunt; Virginia, J. H. Moore; West Virginia, D. B. McLain; North Carolina, E. Floyd; South Carolina, T. T. Moore; Florida, R. F. Phillips; Georgia, G. W. H. Whitaker; Alabama, E. S. Chisholm; Mississippi, J. D. Miles; Missouri, J. G. Harper; Louisiana, G. J. Friedrichs; Texas, J. A. Tulloss; Arkansas, E. Collins; Kansas, A. H. Thompson; Tennessee, H. W. Morgan; Kentucky, A. O. Rawls; Ohio, A. F. Emminger; Indiana, S. B. Brown; Illinois, A. W. Harlan; Michigan, Geo. H. Field; Wisconsin, Arthur Holbrook; Minnesota, D. C. Price; Iowa, L. C. Ingersoll; Nebraska, T. C. Kern; Nevada, W. O. Conwell; California, William Dutch; Oregon, S. J. Barber; Territories at Large, E. T. Darby.

FOURTH SECTION—OPERATIVE DENTISTRY.

Dr. G. C. DABOLL read a report prepared by Dr. I. J. Wetherbee, in which it was held that various rules and principles of practice followed by the ten thousand, more or less, practitioners of dentistry in the United States, would present a condition of things that would awaken the greatest possible surprise, so diverse are the views of dentists regarding the methods to be employed to gain a satisfactory end. Under this condition of affairs we are forced to the conclusion that there is at the present time a dearth of scientific knowledge requisite for the skillful practice of dental surgery. The "New Departure" holds that in all well organized teeth gold should be used as a suitable material for filling, and its design is to teach that "failure in operations" is the result of

lack of knowledge, and not attributable to defective manipulation. Because teeth again decay after having been well filled, and from the same cause which produced the first decay, are we to infer that the chief factor in this newly recurring disaster is a want of compatibility on the part of the gold and the dentine? Is it not true that dentists have been eclectic in their practice? Have they not used amalgam when, in their judgment, the usefulness of the teeth would best be secured by it? Have not the oxychlorides and tin foil had prominence in practice? It is true that many teeth have been sacrificed in the past, and will be in the future, for lack of knowledge. It is a generally well known fact that gutta-percha will preserve a tooth as long as it remains intact; but the frequent repairs to which the "New Departure" system subjects the patient will aggregate in a decade a larger expense than if they had been filled with gold in the first instance. It is my intention to voice the general sentiment of dentists, and give as far as possible an opinion which many years of intelligent practice has confirmed. No practical man expects to save all the teeth he fills. Although the cavities in the teeth may be filled perfectly, we have little or no control of the causes which first produced the destruction of the tissue. I deem it proper in this report to give a brief summary of what may be considered general practice on the part of contour operations. It is claimed that in cases of good tissue the new portion should be built up as near as possible to the natural size. Those who practice separation may be divided into two classes: First we have the radical separatists, who with file and chisel cut through good and poor tissue alike, leaving the teeth in a sadly demoralized condition. The excuse, however, for this is, "greater facilities for operating," "greater facility for cleaning," and "less liability of decay." We have next in order the more moderate separatist, who is careful to secure a sufficient general separation, and also to give a much wider space on the lingual and approximal surfaces, thereby retaining the good appearance of the teeth. This practice, so far as conditions may indicate, is to be approved, and indeed the surfaces in such cases should be well polished.

As to bleachants, chlorinated lime has been used for bleaching discolored teeth, but has now fallen into disuse; for although at first satisfactory, future results do not justify its application. Chloride of sodium is open to like objections from the effect produced on the calcareous portions of the dentine. Strong spirits of camphor is an excellent bleachant. It is very effective; in a very short space of time dissolving the pigment in the cells, as well as permeating the hard tissue,

and leaving no bad results. So much of the dentine as can be safely removed, should be. The spirits of camphor should be applied for such time as is requisite. The rubber dam should be put in position ; then fill the root with gold in all cases. Fill the cavity with great care and thoroughness, and you will be well pleased with your success. There has not transpired anything new during the past year as to the best method of extracting teeth, nor a more effectual method of treating salivary calculus, nor a surer way of disposing of alveolar abscess than those generally practiced. The extracting and replanting of teeth for the purpose of curing the latter disease is a very objectionable practice, and should be abandoned.

A majority of the section, in considering this paper, deem it their duty to take exception to one or two of the views advanced, and would respectfully dissent from the statement that all roots of the anterior teeth should be filled with gold ; believing, as they do, that other materials can be used for the purpose more easily and with equal success. Also, they regard the replanting of teeth for the cure of alveolar abscess as good practice in certain extreme cases.

Dr. GEO. B. McDONALD, Conneautville, Penn., read a paper, entitled " Proper Management of Proximate Surfaces of the Teeth," being an essay upon the causes of failures and methods of treatment.

As the cutting and grinding surfaces of the teeth are often involved with the proximate, they are included in the same remarks. The frequent failures to successfully abate the ravages of caries is in very many instances leading to the belief that dental surgery is not the way to save the teeth. Nine-tenths of our failures are due to imperfect operations on the proximate surfaces. Light must be disseminated, in order that we may be taught how to manage these surfaces. Now, if by discussing the management of proximate surfaces and having practical demonstrations, we can be so illuminated and qualified as to enable us to reduce the ratio of failures to one in ten, instead of nine in ten, we shall certainly be amply rewarded for our labors. For the purpose of illustration, I will describe the proper preparation and filling of the proximate surfaces of a right upper central incisor and a right superior first bicuspid, where the cutting edge of the one and the masticating surface of the other were involved, both teeth having been previously filled. After a careful examination of the incisor we find the causes of the failure of the original filling to have been—first, we did not have room enough laterally to fill the tooth properly, and that we wedged the same day we filled it ; second, we did not properly anchor our fillings in the cervical, palatal and labial

walls of the tooth ; third, we did not bevel the margin of the cavity thoroughly, especially at the cervical margin ; fourth, we packed our fillings at the cutting edge in enamel, which shows there were checks in the cutting edge of the tooth, which caused the edge to split off when exposed to the force of biting hard substances ; fifth, too large pieces of gold were used, and they not perfectly impacted, as a sufficient length of time was not expended upon them to make a proper filling ; sixth, the gold was not finished down perfectly even, especially at cervical margin. These are six good and sufficient reasons why our fillings fail—any one of which was a sufficient cause of failure. These being facts, should we be surprised that we fail so often ? With the knowledge gained in ascertaining why we fail, we will proceed to refill these teeth with the intention of preserving them a number of years. Having wedged it apart from the adjoining tooth from one-sixteenth to one-eighth of an inch and kept it in that position for a week or two until all soreness has subsided, we now apply the rubber dam, and take a properly-shaped corundum wheel and cut away that portion of the cutting edge yet remaining between the cavities in the mesial and distal surfaces, as may be required. Now proceed with a properly-shaped stone-cut engine bur to cut retaining grooves through the cutting edge of the tooth, extending them to the cervical, labial and palatal walls. We then properly bevel the entire orifice of the cavity, removing with a strip of No. 0 emery-cloth every portion of disintegrated tissue, polishing the external margins and clearing out carefully all debris. Now take a sheet of No. 4 cohesive gold, fold it four times, and, with a pair of nickel-plated foil shears, cut into strips one-sixteenth to one-eighth of an inch wide, anneal one of these strips, and, with properly-pointed hand instruments, anchor it at a starting point made along the cervical wall of the cavity ; then, with a properly-shaped plugger adjusted to the electro-magnetic mallet, proceed slowly and surely perfectly to pack the strips of foil against the walls of the cavity until we have restored the form of this tooth to its original contour, taking care that the density is perfectly uniform in every part. We now finish this filling with properly-shaped separating saws, files and strips of No. 0 emery-cloth, trimming off any overhanging gold, especially at the cervical margin.

On examining the first right upper bicuspid, which has been previously filled, we find a portion of the gold gone and the tooth structure partially decayed, so that the rest of the filling would fall out if it were not for the adjoining teeth. We find all the causes of disaster that were present in the case of the incisor, with two additional ones—an organic

fissure on the grinding surface of the tooth, which should have been opened into and the two proximate cavities connected through it. Since we did not do this, saliva and other destructive agents were allowed to get under the filling, and we now find the tooth extensively decayed and going to ruin. We also find that the pieces of gold were too large and were made up of cylinders, pellets and ropes of gold twisted up with the fingers, which should never be done. The fillings are also found loosely pressed together, and there is no absolute cohesion of the gold—the condition which must be secured to get the best results. After wedging this tooth the same as the incisor, we apply the rubber dam and proceed to prepare the cavity for filling. After getting it nearly ready, we have a compound cavity presented extending from the cervical wall on the mesial surface through the fissure to the cervical margin on the distal surface; but the walls are so thin, to about one-eighth of an inch from the end of the cusps, that there is danger that they may break; we are the more certain that this may occur when we notice that the cusp is quite long on both this tooth and its antagonist. Our past experience has taught us that with this condition one or both of the cusps may be split off and our operation prove a failure. Being convinced of this fact, we proceed to cut off the cusps to the point indicated, using corundum wheels of simple form. After cutting off the decayed portions of the tooth we make a starting-point in the cervical walls, and anchoring grooves along the palatal and buccal walls, having previously formed and finished the margins of the cavity with a fine, sharp bud-shaped bur, being sure not to leave a particle of disintegrated matter at the surface, where the gold and tissue are in contact. After properly beveling and trimming the margins, we will finish them with strips of No. 0 emery-cloth, and proceed to fill as before, by packing narrow strips of gold in the starting-points and grooves; first, insert two or more with properly-shaped hand instruments, and then take a properly adjusted electro-magnetic mallet and proceed as described in the former case, until we have restored the perfect contour of the tooth in every particular. It is absolutely necessary that the adjoining teeth should knuckle up to the filling so as to come in perfect contact.

If we have spent several hours on this operation, and have charged thirty or forty dollars for it, it will be far cheaper to the patient when the durability of the operation is taken into account.

If a barrel was hooped with common wrapping twine, it would be a very incomplete barrel. The ordinary method of filling extensively decayed teeth with cylinders and pellets and ropes of gold twisted up with

the fingers and packed with the automatic mallet or hand-pressure instruments, is to be compared with the common wrapping-twine hooped barrel. A tooth treated according to the method I have described will stand any necessary force without being split apart, because the enamel is protected by a band of gold as strong as steel. "Haste makes waste," is an old saying, and in nothing can it be better illustrated than when performing operations on the natural teeth. Hasty work is usually very imperfect, while operations upon which sufficient time is spent are far more likely to be successful. If we will practice in accordance with the principles herein stated, our operation will be found to be uniformly successful.

Dr. T. H. STELLWAGEN, of Philadelphia, read a paper entitled "The Natural Dentine for Capping Pulps of Teeth," in which the writer referred to well-known operations in surgery—the transplanting of small particles of epidermis from healthy parts of the body to assist in forming new and healthy cuticle. A step further, and we remember that small portions of bone or periosteum are in the same manner used as centres of calcification. For the purpose of assimilating the capping material to the natural dentine, substitutes have been made, which were so ingenious and useful that it would seem, for a time, that they have served the object of their inventors. Why not, then, use tooth structure? The method I have adopted to secure this has for eighteen months proved successful. It is as follows: After removing the diseased portion, where a pulp is exposed, allow the wounded surface of the pulp to glaze over, just as a surgeon does before he closes a wound. Then, with a clean, sharp excavator (and it gives no pain to speak of), shave off enough of the healthy dentine of the tooth to cover the part to be capped. After this, place the usual capping material over the pulp, but by no means remove the powdered dentine. Allow me to add that I keep the surface of the pulp as free from all foreign substances as possible. The question has been asked by some of my friends, "Why could we not use the dentine of a dead tooth?" I would simply say that I am not convinced but what the use of living dentine may not be better than the use of dead dentine; for when the dentine for covering is taken from a tooth in the head we get matter which is living. There seems, however, to be something yet to be fully understood in this matter, as to whether tissues as low in organization as bone and dentine do die so readily as to render their use in such cases undesirable. However, setting aside these theoretical questions, I would advise scraping off a little of the wall of the tooth with an excavator shaped something like my hand. If I had to

scrape the dentine from a dead tooth held in my fingers, there is danger of it being spilled about in the cavity when applying it to the exposed pulp, and having a little of the dust remaining to interfere with the perfect adaptation of the filling to the walls of the cavity.

Dr. G. J. FRIEDRICHs, New Orleans, read a paper on "Erosion of the Teeth and its Local Treatment."

"I am really astonished to find that so little attention has been devoted to so serious a disease. Hardly two pages in any one work on Dental Surgery, of the many I have consulted, have been assigned to this subject. Nevertheless, ten per cent. of the patients consulting me for dental advice are suffering, more or less, from this disease. The only remedy, thus far, is to wait until the disease has gone so far that the eroded part can be cleaned out from the cavities. The erosion, properly speaking, confines itself to the enamel, and generally takes a number of teeth at the same time, usually developing itself on their surfaces, near the margins of the gum. The decomposed part is white, and of a soft and chalky texture. The teeth most likely to be affected by this disease are inferior incisors and bicuspids, and sometimes only confined to one side of the mouth; the next most liable are the molars and cuspids.

"I don't propose, here, to force my opinions, nor theorize upon the probable cause or causes of erosion. I will, however, repeat the promulgated opinions of different writers on this subject."

The doctor here quoted from Prof. Harris' "Principles and Practice of Dental Surgery," and other works.

"*Treatment*: We all know that the vital force is ever on the alert to combat injury done through the destructive influence of disease. Now, it is self-evident, if we can bring assistance to the vital force in the teeth, this disease can be cured. A valuable agent is nitrate of silver; for when applied to the eroded part of a tooth, it practically says to disease, 'Thus far shalt thou go and no further.' When the nitrate is brought in contact with the saliva, oxide of silver is deposited, which protects the tissues against the disintegrative action of the saliva, and relieves them of their sensitiveness, and assists to eradicate the disease. The mode of using is as follows: A chip or stick of nitrate of silver is applied to the eroded part of the teeth, moving it about until it is decomposed, taking care to keep it from coming in contact with the gums as much as possible. If, after a week's time, the sensitiveness to the touch has not been allayed, the application must be renewed until this is obtained. No danger need be apprehended as to its too frequent use, as no injury to

the teeth can ensue. You will find, after a few applications, that the surface of the eroded part is covered with a thin film—oxide of silver—which must be allowed to remain until the layer of enamel is consolidated, after which it can be scraped off and the surfaces polished. In connection with this, the constitution must not be neglected ; for if the system is in a bad condition, remedies must be applied to bring it back to a healthy state."

Dr. R. FINLEY HUNT, Washington : I do not like to lead the way so often in a day, but on this subject I am particularly anxious, and especially with reference to the subject of the last paper. It is one that calls for our serious attention, and is one I have devoted considerable attention to for a number of years. I have noticed, in this paper, the extracts from some authors on the subject, holding that the disease of erosion is attributable to the acid condition of the secretions of the mouth. I think that is a mistake entirely. I have long been of the opinion that erosion was caused by the action of alkali, and not of acid. The theory taught in the books is that the secretions of the mouth should be alkaline, and not acid in their reaction. It is a question in my mind whether there should be either alkali or acid, or whether the two should not be tempered by their combination in the mouth as to produce a neutral condition. In a perfectly healthy person the forces are so balanced that there is not sufficient secretions to injure the teeth. In some mouths you find a strong acid reaction, and in others a strong alkaline reaction. In the course of my investigations I have found this state of affairs : I have found, by the use of litmus paper, that the alkaline reaction varied in intensity in different parts of the mouth. Finding a different degree of alkaline reaction in different parts of the mouth, accounted to me for the fact that some teeth were decayed and some were not ; and it also led me to believe that one portion of the margin of the gum could be in a diseased condition, while another portion, nearly contiguous, might be perfectly healthy. I have found that erosion of the teeth was often attributable to the use of improper tooth brushes, and tooth powders containing alkaline properties.

I do not class the erosion of teeth, such as I have been speaking of—this clear, clean erosion, without any discoloration—with that found in a great many cases ; I don't mean to class that with the green tartar, as mentioned in Dr. Friedrichs' paper. In one case that came under my observation, a good many years ago, the patient was a lady who had arrived at the advanced age of over seventy years ; she had taken particularly good care of her teeth ; all the organs of her mouth were in a

healthy condition ; the lower central incisors were thus eroded on the alveola surface, near the gum—near the neck of the teeth. The erosion, in her case, extended to the proximal surface of the teeth, and then around in a groove, nearly to the cutting edge. That groove was quite smooth, and as clean as though it had been polished. I find in a great many cases this appearance of the surfaces. I wish to state, in reference to this matter, that I don't think we can place too much stress on the position that is taken in the paper of Dr. Friedrichs, that we should always diagnose our cases with a view to systematic treatment, as well as local.

I wish to cite two cases, which will illustrate what I mean. A number of years ago a young patient came to me, the daughter of a physician ; she was about fourteen or fifteen years of age. I found every indication of a rapid general decay of the teeth. I immediately, with my litmus paper, tested the secretions of the mouth, and found there was a strong acetic reaction. The doctor agreed to subject his daughter to a course of medical treatment which should lessen that condition. I then filled the child's teeth, and since that time she has had occasion to have but one additional filling in her teeth. I have since, when I found this acid condition of the secretions of the mouth, sent my patients to that physician, or another in the same town, and they have, in every instance, restored the secretions to a neutral condition. I had a case, later, of two young girls, who were twins, having, apparently, the same structure and development of teeth ; I filled the teeth of both, and after a lapse of two years they came to me again for examination. I found there was a state of general disintegration in the teeth of one of them, but the character of the decay differing entirely from that produced by acid, and I found it was the result of a strong alkaline reaction ; and I have found, always, that the cases of destruction of teeth by an alkaline agent agree—corresponding, in all their symptoms, with the appearance and symptoms of decay in the teeth of this girl.

Dr. E. T. DARBY, Philadelphia : I looked over this paper of Dr. Friedrichs' before it came to this society ; I do not recognize anything new in it. I doubt not almost all the members present have been in the habit of treating erosion of teeth with nitrate of silver, and yet its first objection is that it will discolor the teeth in almost every instance ; and the erosion will go on, in most instances, unless the nitrate is applied frequently. I would call attention to the galvano-cautery, introduced by Dr. Salmon. It consists of a very strong battery, from which he derives his electricity. He uses this for extreme sensitiveness in the teeth, and

for the erosion of the alveola surface of the bicuspids, or canines. The great objection to it is, it cannot be used in cavities where access is difficult, as the points would touch as it entered the cavity ; still, I should very much prefer this, in the majority of cases, for erosion of teeth. So far as I am aware, Dr. Stellwagen has presented original views in connection with capping of pulps, but I cannot see very much in the suggestion that is liable to prove of value to us. In the first place, if I were to cap a pulp with tooth structure, I should take it from a tooth that had been extracted. When he scrapes his dentine from the surface of the tooth it becomes dead material, whether it has been away two minutes or ten days. Therefore, I am of the opinion that dentine, introduced upon a pulp in this condition, will produce irritation. We all know that many places will bear an enormous amount of irritation without giving up, as we say ; but I should be very careful how I applied this, and to what kind of exposure I applied it. Is not Dr. Stellwagen's success due more to the gutta-percha capping with which the exposure is covered ? I can say that in ninety per cent. of recent exposures which I have capped, I have had success with oxide of zinc, followed with the oxychloride.

There is one other point on which I wish to speak, and that is, the so-called "New Departure." I think it has received, perhaps, as much public attention as it ought. Every man at the present time, I think, has made up his mind in reference to the "New Departure." I risk to say there are men who do not attend these meetings, and have picked up, here and there, scattered ideas of the "New Departure," who are practicing it. These men are all over the United States, and are constitutionally lazy, and willing to grasp anything that presents easy work. (Applause.) In Philadelphia we don't take very much stock in the so-called "New Departure." We look upon it as a slovenly method of practicing dentistry. (Applause.) And I say boldly, that the man who follows the doctrines of the "New Departure" is doing more injury to the dental profession than he would do it good if he lived to the age of Methuselah.

Dr. E. OSMOND, Cincinnati : I would commend the use of nitrate of silver in erosion. I described the manner in which I applied it several years ago. I do not like the use of the stick or crystal, but the way in which I use it is by dropping a small portion in a dish of paraffin, and then applying it by means of cotton twisted around a bit of orange wood, and rubbing it over the affected surface. I do not believe that the cure is effected by its escharotic action, but by its union with the albuminous

portion of the dentine. We must be careful to use only sufficient to produce this result, and not enough to destroy the tissue. I also use the nitrate in pyorrhœa alvelaris, with good results. I first clean the teeth very carefully, and then apply it to the soft tissues. In regard to Dr. Stellwagen's paper, I would say that I cannot see any analogy between the process described and skin-grafting. I think Dr. Stellwagen's success is doubtless due to the materials he uses for capping.

Adjourned.

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY,
OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, February 2d, 1880.

The PRESIDENT then called upon Mr. OAKLEY COLES to read his paper on the "Classification of Deformities of the Upper Jaw."

Deformities of the Upper Jaw; An Attempted Classification of them.
By OAKLEY COLES.

Beyond those well-marked deformities of the upper jaw known as congenital cleft palate, and fissured alveolus, we have others of a more or less severe form that are of sufficient importance to attract notice on account of the defective articulation they may be associated with, or that may excite interest from the endeavors that have been made from time to time to translate their pathological signification.

The question has been invested with an unnecessary amount of obscurity from the variety of terms that have been in use to express very often the same class of deformity: thus at the present time there would be no difficulty in finding in the works dealing with this and allied subjects such names as—(a) V-shaped maxillæ, (b) contracted arch, (c) saddle-shaped palate, (d) high roof, (e) vaulted palate, (f) narrow or contracted palate, (g) highly-arched palate, (h) keel-shaped palate, (i) Gothic palate, (j) epsilon palate.

These terms are used in many cases without any accompanying

explanation of the meaning attached to them by the author, and since in most instances they have no definite signification in themselves, confusion and misconception have very often arisen in the minds of those who have had to study and investigate the class of cases under discussion.

2. If the importance of the subject be such as to have induced so many authors to have adopted so varying a nomenclature, it seems self-evident that a more precise and scientific classification is necessary.

3. It would be but little to the purpose were any one to propose a simply arbitrary set of terms to supersede those now in use. They would be open to the objections urged against existing names, and would, if merely arbitrary, still lack that degree of scientific accuracy that is essential to the successful prosecution of a purely morphological investigation.

The chief obstacle to the attainment of the necessary end may be said to have been due to the absence of any exact standard of an absolutely perfect form of jaw.

To say that a well-developed dental arch will correspond in outline with one or other of the conic sections is only to remove the difficulty one step further off, and render a complex subject still more difficult of description.

4. My investigations as to the correlation between the palate and cranium, commencing some ten years ago, compelled me to take some record of the dental arch in such a manner that it could be easily recorded and tabulated. The ordinary terms, such as paraboloid, elliptical, horse-shoe shaped, and others were quite useless for my purpose, on account of the almost infinite variety of form that each term might be made to include.

After a series of measurements and experiments that I need not now describe, I arrived at the conclusion that the triangle was the best geometrical figure for the object that I had in view, as it gave in the simplest and most diagrammatic form two at least of the measurements that were required, namely, the length and breadth of the dental arch. The interbicuspid measurement I had not at that time thought of, except as an independent item, to be measured apart from the length and breadth.

5. Desiring to form a triangle that should be applicable to the largest number of cases, whether edentulous or not, and capable of use with approximate accuracy to all races alike, I decided to form the base of the triangle by an imaginary line drawn from the centre of the distal surface of the second molar on each side, as near to the level of the alveolus as

the third molar (if present) would admit of. By choosing the second in preference to the third molar, I disposed of the liability to error arising from abnormalities of the wisdom tooth, and at the same time was enabled to take my measurement at any period after the thirteenth year of the patient's existence.

One other object was gained by the choice of this position, and that was that the absence of the molars on one side of the mouth did not of necessity render measurement impossible, as the centre of the distal surface corresponds very nearly with the centre of the alveolar ridge, which in this region is generally well marked.

The base being thus obtained, the remainder of the triangle was produced by lines drawn from the point of contact of the mesial surfaces of the two central incisor teeth to the extremities of the base line already referred to. This incisive point, as I shall hereafter call it, still keeps the angles of the triangle upon the central line of the alveolar ridge, so that in this respect again we measure from a point of least variation.

We have thus procured a triangle, giving at the molars the breadth of the jaw, and by a line drawn from the apex of the triangle to the centre of the base line the length of the jaw, exclusive, of course, of the space occupied by the third molars. My own observations in connection with cleft palate, and the observations of Dr. Smith, of Edinburgh, and Dr. Langdon Down and Mr. Charles Tomes, had, however, caused me to pay special attention to the measurement of the space between the bicuspids from either side of the mouth.

This interbicuspid measurement has always been deemed a very important one, and most writers on the deformities of the palate have referred to it.

Contrary to the practice of some observers, I was induced to choose the second bicuspid as the best point of observation, as it corresponds with the position occupied by the second molar of the primary dentition, and is altogether the tooth subject to the least variation of position, if the changes incident to the growth of the jaw be normal in character. Whilst on the other hand, given an abnormally-developed jaw, we may be tolerably certain that the second bicuspids will to some extent be affected. The interbicuspid measurement was, therefore, taken at the line of junction of the neck of the tooth with the margin of the alveolus on either side of the jaw, this position being chosen so as to avoid the inaccuracies likely to occur in the event of a largely-developed bicuspid crown.

At a distance from the base, corresponding with the distance of the

second bicuspids from the distal surface of the second molar, this interbicupid line was allowed to traverse the triangle. These lines and distances were obtained with an ordinary pair of compasses, and measured off by means of a millimeter rule. Beyond this, the height of the palate was taken, together with the total length (in the skull), and also its transverse and antero-posterior curves.

6. In the methods that I have thus endeavored to describe there are certain sources of inaccuracy and errors of observation that may be readily seen, and to some extent allowed for.

Thus, deformity of the palate, arising from premature ossification of the intermaxillary or palato-maxillary sutures, would of necessity invalidate the tracings and measurements of the palate, whilst abnormally large crowns to the teeth, or extreme irregularity in the crowns, would quite as obviously render comparatively valueless the data on which the triangle was constructed. Still, if these sources of error be fully recognized and carefully allowed for, an approximately accurate diagram may be obtained.

7. My observations were in the first instance directed solely with the object of ascertaining certain normal measurements, and the first set of these dimensions were taken by means of strips of lead, accurately moulded to the contour of the palate in different positions, the results being immediately outlined on cardboard ; the measurements were then taken off by means of compasses and a millimeter rule. It will be desirable here to give three dimensions of the palate, viz., the width taken from the inner margin of the alveolar process opposite to the second bicuspids : the height, taken from the centre of the line representing the above width to the centre of the palatal arch ; and the length, taken horizontally from between the central incisor sockets to a vertical line let fall from the posterior nasal spine. The skulls examined fall into two series : first, thirty-four adult skulls of European origin ; and secondly, thirty-two adult skulls of mixed races.* In the first series the average length was 49 millimeters (maximum 58 m., minimum 40 m.) ; the average width was 35 m. (maximum 42 m., minimum 31 m.) ; the average height was 9 m. (maximum 15 m., minimum 5.5 m.). In the second series the average length was 54 m. (maximum 65 m., minimum 43 m.) ; the average width 35 m. (maximum 40 m., minimum 29 m.) ; the average height was 12 m. (maximum 18 m., minimum 6 m.). These figures will be found to correspond pretty closely with those published by Dr. Claye Shaw,† except in relation to the height of the palate, in which Dr. Shaw's results differ very materially from those which I have obtained. The following table will show at a glance the points of agreement and difference between the two series of investigations :—

* On the different size of the jaws in civilized and uncivilized races, see Darwin, "Descent of Man," vol. I, p. 118 ; Herbert Spencer, "Principles of Biology," vol. I, p. 445.

† *Journal of Mental Science*, July, 1876, p. 200.

MEASUREMENTS OF THE NORMAL PALATE.

	Average length in millimeters.	Average width in millimeters.	Average height in millimeters.
European skulls (34) (Oakley Coles).	..49{ max. 58 min. 49*35{ max. 42 min. 21*9{ max. 15 min. 55
Skulls of mixed races (32) (Oakley Coles).	..54.9{ max. 65 min. 43*35{ max. 40 min. 29*12{ max. 18 min. 6
Number and ori- gin not stated (Claye Shaw).	..50{ max. 57 min. 4036{ max. 44 min. 2114.5{ max. 25 min. 9
	At first molars.	At first bicuspids.	At first molars. At first bicuspids.

* Taken at second bicuspids.

The only way in which I can account for the discrepancy between Dr. Claye Shaw's measurement and my own in regard to the height of the palate, is by the supposition that he has taken his level from the grinding surface of the teeth, whilst my own was from the margin of the alveolus.

Beyond the dimensions just enumerated, I obtained with the compasses the dental triangle to which I have already directed attention; the first set of observations having special reference to the palate, and the second to the alveolar and dental arches.

Two main facts are deducible from the data obtained in the second instance: First that the best type of well-developed English jaw will give an equilateral triangle as the result of measurements taken in the way I have described. Secondly, that the interbicuspid line will fall upon the triangle some five-tenths in the perpendicular from the base line, and that the extremities of the interbicuspid line will pass well beyond the boundary of the triangle on either side.

Further observations are of course desirable in order to render these statements absolute facts. I have taken an English jaw as the standard type, as it will be found that with other nationalities there is, I think, the possibility of obtaining certain race distinctions from the character of the triangle. Records for such a purpose must, however, be extended over a very much larger number of skulls than I have at present been able to examine. The facts, however, that I have already obtained are sufficient for the special purpose to which this paper is devoted, whilst we look for the help to be obtained from many workers in many places before we can assert any definite conclusions beyond those already given.

8. Having obtained what appeared to be a reliable standard figure, my first impulse naturally was to apply the same method of measurement to the cases of deformities of the upper jaw that were so frequently being brought under my notice.

9. The results were so marked and special in their characteristics that there seemed little question that the difficulty of classifying the various forms submitted to the test of the triangle was in a fair way of being removed. Continued investigations confirmed my first impressions, and those investigations I have endeavored to reduce to a practical issue by making them the basis of a nomenclature that I now venture to submit to the opinion of the profession.

Taking typical cases of strongly marked deformity, I noticed that the nature of the triangle and the position of the interbicuspid line in its relation to the triangle had a definite and intelligible meaning, and

further, that I could transfer to a diagram records of a case that should be capable of a precise interpretation.

Not taking into account an almost endless variety of deformities that possessed some slight modifications as compared with the more pronounced types, it yet seemed quite possible to classify a sufficient number according to rules that were capable of a fairly general application.

10. Thus to one or other of the divisions, long, short, large, small prominent pre-maxillary region, deficient pre-maxillary region, and true V-shaped arch, I found it possible to assign each case.

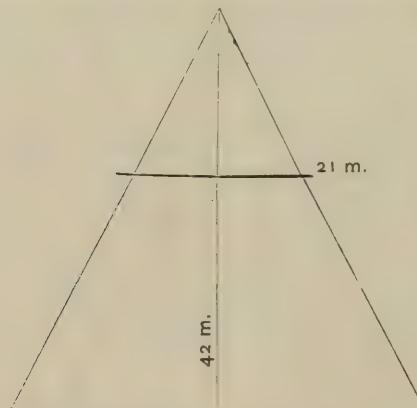
These were scarcely satisfactory terms to use, however, and I have therefore adopted a set of words already known in cranial morphology, modifying their terminations only, in order to avoid a certain hybrid phrase that might otherwise have been created.

Following the order of classes already given, we have then the dolichoid, the brachoid, the macroid, the microid, the premaxillary prognathous, the premaxillary upognathous jaw, and the true V-shaped arch of congenital idiocy, to which I have assigned the name lambdoid

In order to render the subject complete, I propose now to give first the name (with its derivation) and definition of each class, and then pass on to a concise description of a typical case

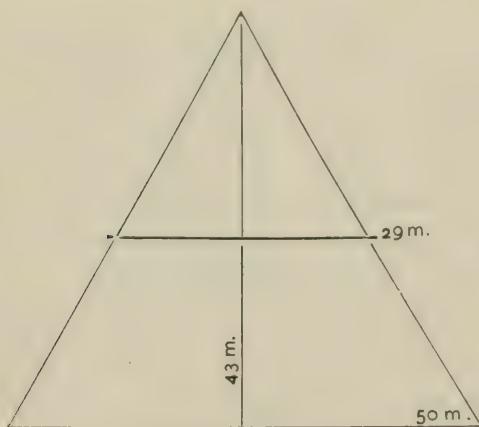
1. DOLICHOID JAW (*Δολιχός*, long).

Definition.—A term applied to an upper jaw in which, with an average or less than average length from base to apex of triangle, the interbicuspid line will be found resting at its extremities upon the sides of the



triangle, thereby showing the degree of parallelism (tending even to bicuspid contraction) of the two sides of the dental arch. The preceding

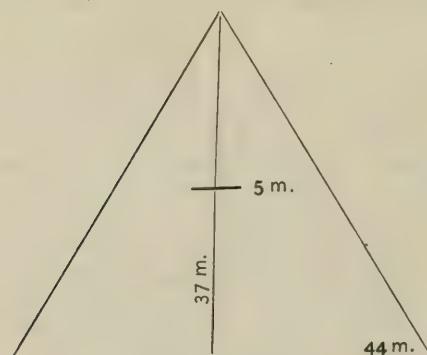
definition of the dolichoid arch will at once show that long and short are but relative terms in relation to this classification ; and that although we may get other varieties possessed of absolute qualities, yet the dolichoid jaw is only long in relation to its width, and not absolutely long in comparison with other jaws. In discussing the qualities of the triangle of the brachoid jaw, I shall have to refer to this again, in order that the points of differentiation may be perfectly clear. Looked at from above, the dolichoid jaw presents the outline of an early English or Saxon window, with its circular top and parallel sides. Its special features are as follows : the



small size of the dental arch occupied by the incisors and canines ; the straight line (more or less marked) on which the bicuspids and molars are implanted in the jaw, the higher plane of the vertex of the palate, and the well nigh vertical direction indicated by the two lateral walls of the palate, in continuation of the alveolus of the bicuspids and molars.

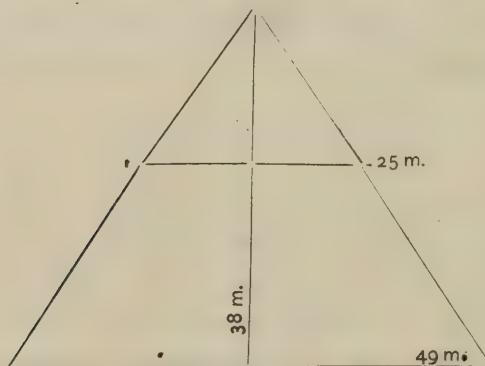
2. BRACHOID JAW (*Bραχίνς, short*).

Definition.—A term applied to an upper jaw in which, with a less than average length from base to apex of triangle, the interbicupid line falls upon or within the sides of the triangle, or quite outside of the sides of the triangle. The above definition shows that there are two varieties of short or brachoid jaws. In the one instance there may be a bending in of the arch in the bicuspid region to such an extent that, looked at from above, it presents the outline of two italic "f's" reversed, and almost meeting toward their centre ; whilst in the other the bicuspids may be but little within the normal range, or even beyond it. In such a case the brachoid character of the jaw is due to the extreme frontal flattening



in the region of the incisors and canines, and in some measure to bulging out of the bicuspids. The palatine surface will present a flattened arch, and occasionally the palatine process of the one upper maxilla will be on a somewhat higher plane than the other. This may be seen by making a transverse section of the plaster model of the mouth; or it may be observed, though less distinctly, by means of the tracing obtained from the leaden rule. Under the classification "brachoid" would be included most of those cases that we now find described as contracted maxillæ. It may at first appear as if there were very little difference between the dolichoid and the brachoid jaw; but closer observation will show that there is a very marked distinction.

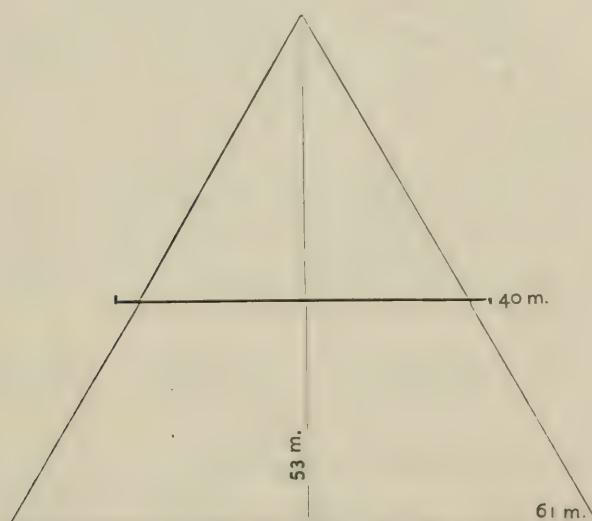
Thus, whatever the length of the dolichoid jaw, the interbicuspid line will not fall within the triangle, whilst with the brachoid jaw it may fall anywhere within the triangle—unless, indeed, owing to extreme short-



ness and breadth of arch, the line falls very much beyond the triangle. Again, it will be observed that whilst the dolichoid antero-posterior measurement is but little if any less than an average arch, the brachoid arch gives a similar line very much below the average.

3. MACROID JAW (*Μαυρὸς, large*).

Definition.—A term applied to an upper jaw in which the measurements of the arch, though relatively to each other normal, are yet absolutely greater than the average standard, the palate, moreover, being the seat of well-marked deformity. The true macroid jaw is comparatively rare, and is invariably found associated with some other abnormality. Beyond its size, it presents but few points of interest, the palate chiefly claiming attention on account of its extreme vaulting. The dental arch is well

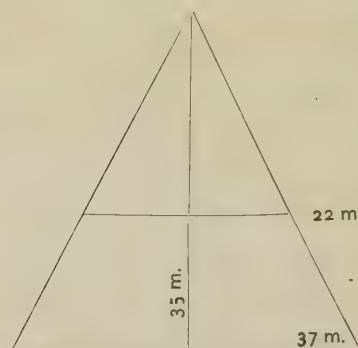


formed, and the teeth regular, but not large, as compared with the general dimensions of the mouth. The most notable example that I have met with as illustrating the special features of the macroid class, is the case of Julia Pastrana, in which the base of the triangle gives a measurement of 61 m., whilst the interbicuspid lines reach the extraordinary length of 40 m., or 5 m. beyond the normal standard. My model is unfortunately not sufficiently perfect for me to take the palatine outlines.

4. MICROID JAW (*Μικρὸς, small*).

Definition.—A term applied to an upper jaw in which all the measurements are below the average standard.

But few words beyond those contained in the foregoing definition are requisite to describe the microid jaw. It is an ordinary upper dental arch,

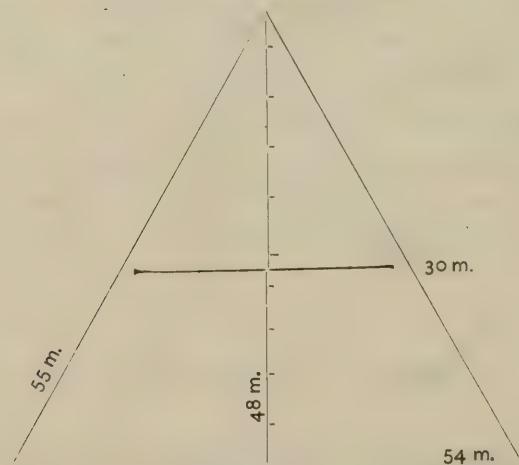


only very much in miniature, properly proportioned, and with fairly developed teeth, the palate deep apparently, but not really. There may be a small amount of lateral contraction, but not sufficient to destroy the symmetry of the arch.

Some idea of the size may be gained from the statement that in one case that I have measured (the patient being thirty-seven years old), the base line was only 37 m. as against 61 m. of the macroid, and the interbicuspid line only 22 m. long as against 40 m. of the macroid.

5. INTERMAXILLARY PROGNATHISM (*Πρό*, before; *Γνάθος*, the cheek or jaw).

Definition.—A term applied to an upper jaw, in which the dental triangle having been taken, the distance from the interbicuspid line to the apex of the triangle is greater than the normal standard, and also greater than the distance from the interbicuspid line to the base of the triangle,



to which it should normally be nearly equal. Thus, in a triangle having its vertical line divided decimally, the interbicuspid line falls a little

over four-tenths from the base, giving six-tenths for the distance from the intercuspid line to the apex of the triangle.

The term prognathous is applied in anthropology to those skulls in which the projection of the upper jaw is excessive, and is accepted as a race characteristic. "All races, all individuals, are prognathous, the difference between them being only in degree; the natives of Europe, notably the Gauls, being least so, and the pure Hottentots reaching the highest maximum of the whole human race."*

M. Topinard recognizes as true prognathism that which he calls alveola-sub-nasal, limiting its area "to the portion of the maxilla subjacent to the nasal spine, which corresponds to the palatine arch, and that next to it in which the alveoli are situated."†

Applying the term to the purposes of a pathological classification, I have deemed it wise to limit still more the area to which it shall refer; hence the prefix, intermaxillary prognathism. Still more shall I endeavor to justify the use of this prefix by arguing, further on, that the intermaxillary bone is an important factor in the production of the deformity. Briefly to describe a case, we find an elongated jaw with a small arch in the incisive region, with the molars and bicuspids implanted nearly in a straight line, and but slightly divergent on either side from the central line of the palate. The bicuspids and molars appear but a moderate distance through the alveoli, and the incisors and canines will be found separated from each other by a varying amount of space, according to the age of the patient, the eversion of the teeth in late middle life being increased by mechanical causes operating on their primary displacement.

The alveolar arch will be observed in front as projecting abnormally, and retaining its marginal peculiarities, an important point to notice, as it enables us to diagnose with other symptoms between the prominent teeth of the thumb or tongue-sucker and the case of true congenital intermaxillary prognathism.

It might at first be supposed that the alteration in form was due to great lengthening of the jaw backwards, and projection of the teeth only, and that the prognathism of these cases was apparent rather than real; but exact measurements from the triangle show that a typical case gives a remarkable resemblance between this malformed English jaw and a typically developed Hottentot's jaw, the interbicuspid line in the abnormal arch falling a little over four-tenths from the base line, and in the

* Topinard, "Anthropology," p. 282. English Ed. 1878.

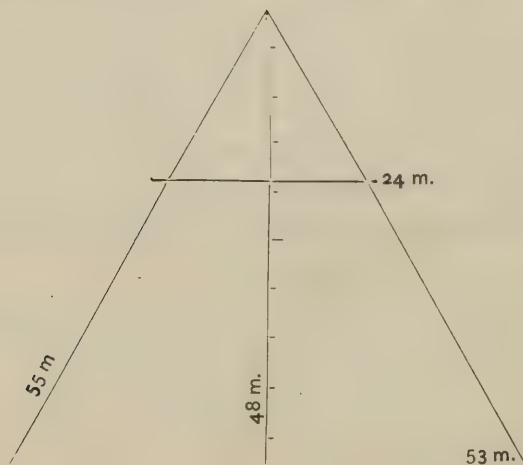
† Topinard, "Op. Cit.," p. 281.

Hottentot's jaw falling exactly four-tenths from the base line, thereby showing not only the similarity between the two, but also indicating the region in which the departure takes place from the normal English arch. As the posterior division corresponds, so we find the anterior measurements from the interbicuspid line to the apex of the triangle very nearly the same, that is, nearly six-tenths for the intermaxillary prognathism, and fully six-tenths for the prognathous Hottentot.

The palatine arch does not call for any special description, as it displays no unusual features.

6. INTERMAXILLARY UPOGNATHISM (*Ίπὸ, deficient, less than; Γνάθος, the cheek or jaw.*)

Definition.—A term applied to an upper jaw in which, the dental triangle having been taken, the interbicuspid line will fall far in advance of the normal distance from the base of the triangle, the four incisor teeth being crowded together, and the canines, by reason of the smallness of the anterior section of the arch, kept out of their normal



position. The dimensions of the case of upognathism that I have chosen for the purpose of description gives a base line, and sides of the triangle, almost identical with that obtained from the prognathous jaw described in the last section. The points of difference will, therefore, be more readily appreciated, as the decimal measurements from the apex are the same.

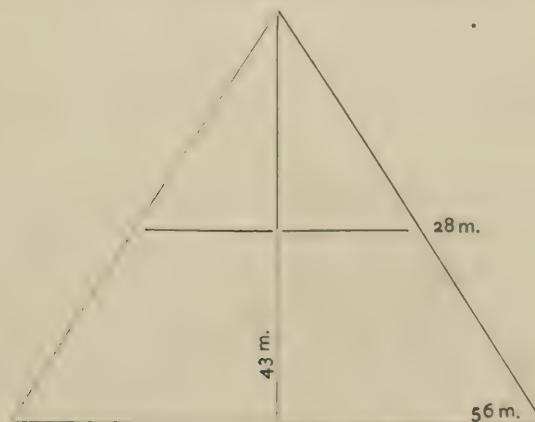
The upognathous jaw is one in which we find the bicuspids and molars occupying a fairly normal position, but the centrals very close together, and the lateral incisors almost immediately posterior to them, the canines

standing outside the arch and in part filling up the gap between the bicuspids and central incisors. The vaulting of the palate is considerable, its lateral walls approaching the vertical, whilst its antero-posterior outline gives an index of the depth of the alveoli and the abruptness of the curve. All the characteristics are probably exaggerated in the present case, on account of the large size of the teeth, and the very pronounced development of their investing alveoli. Yet, making allowance for these sources of error in estimation, sufficient remains to enable us to obtain adequate data for the purposes of the present classification.

Referring, then, to this obtained triangle, we find that whilst in the intermaxillary prognathous jaw we obtained an interbicuspid line falling a little over four-tenths from the base line, in the intermaxillary upognathous jaw we have the interbicuspid line falling rather more than six-tenths from the base line. Or, putting the case the other way, we have in the prognathous jaw the apex six-tenths in advance of the interbicuspid line whilst in the upognathous jaw we have it only a little less than four-tenths, thereby showing the excessive development with interdental spacing in the one, and the diminished development and interdental crowding in the other; whilst the interbicuspid measurement (only 24 m.) shows the contraction of the arch owing to the diminished size of the intermaxillary region.

7. LAMBDOID JAW (*λ, lambda*).

Definition.—A term applied to an upper jaw in which the outline of the dental arch and the sections of the palate resemble the form of the Greek letter *lambda* and present a wedge-like appearance.



Under the name of V-shaped arch we have hitherto included those cases of deformity of the upper jaw that are regarded as being specially

associated with a very low mental development, whilst, as I have shown in an earlier part of this paper, the term was allowed to include a number of conditions that the name did not in all cases indicate or fairly represent.

In the six classes of abnormal jaws that I have already described, I have included, under a precise name, most of those that have been hitherto referred to under the more general term of V-shaped, but we still have one very pronounced form of abnormality that requires a special description. If the jaw were looked at upside down, the term V-shaped would properly describe it, but looked at in the ordinary way it corresponds in outline with the Greek *lambda*, and hence I propose the adoption of this name ; first, as being diagrammatically more appropriate ; and, secondly, from its Greek origin offering greater uniformity with the titles of the first six classes enumerated. I have intentionally left the description of the alphoid jaw till the last, as, whilst all the other classes have their parallels in normal jaws, in form if not in degree, the lambdoid jaw is a class alone, without normal parallel, and doubtless the product of profound central lesions during early embryonic life.

The outline it presents I have already mentioned ; beyond this, we have to note the large size of the teeth, the prominent markings of the mucous membrane and the diminished interbicuspid measurement ; thus, in a typical case we have a base line of 56 m., a length of 43 m. from base to apex of triangle, and an interbicuspid measurement of only 28 m., falling within the sides of the triangle ; the central and lateral incisors semi-rotated, and the palate presenting the typical wedge-shaped outline, the vertex being above the normal plane, and the soft palate too short to touch the posterior wall of the pharynx. Although it is not essential to idiocy that this deformity should exist, still it is tolerably certain that the lambdoid arch is rarely seen, except in connection with low mental development, and especially where the idiot is microcephalic.

Without entering upon the much-vexed question of the proofs of congenital idiocy, it may yet be well to say that such cases rarely, if ever, occur without showing some deformity of the jaw, if sufficiently accurate dental observations be made to ascertain the fact.

Having thus endeavored to justify the expediency of the classification that I have brought forward, I propose now, as briefly as possible, attempting to give an explanation of the origin of those lesions to the enumeration of which I have devoted this paper, stating at once, however, that whilst hitherto I have confined myself as strictly as possible to

a bare recital of observable facts, I shall now pass on to a more speculative series of remarks.

I must confess I am unable to explain at present the origin of the dolichoid and brachoid jaws. The investigations that I am still carrying on will, possibly, at some future time enable me to throw light upon the subject, but as yet my views are not sufficiently definite to be of any value. It would be easy to say the changes in form are due to premature synostosis ; that would doubtless give a well-known name to the process, but it would not at all explain the origin of the process, or why the ossification should take place in one direction rather than another. The whole of this question, as with the macroid and microid jaws, bears an intimate relationship to general cranial morphology, and for that reason I must defer any attempted explanation of the origin of a set of deformities, in connection with which we can at present deal only with processes and results, and not with original causes.

In regard to the prognathous and upognathous jaws, we are in a somewhat more satisfactory position, and although I would not presume to speak with authority, yet I trust I may be able to put forward a case with such a show of reason as shall at least command further and patient investigation.

My first assertion is this, that the deformity known as *intermaxillary prognathism* is the result of a force operating on the intermaxillary bone, such force originating in the body of the sphenoid, and being transmitted by the intervening nasal septum. (I may at once say that when speaking of *force* I mean a direction of growth in a given line of such energy as to overcome the resistance offered to it by surrounding structures.)

The foregoing assertion is based upon the interpretation of the following observed facts : First, the true case of intermaxillary prognathism will have a long thin nose. Secondly, this long thin nose is not observable during the first dentition, nor is the prognathism, excepting to a very slight degree indeed. Hence we may conclude that the long thin nose and prognathous jaw are capable of intensification by growth and development during early life. Thirdly, it has been shown that the measurement from the interbicuspid line to the incisive angle is greater in the prognathous than in the normal jaw ; hence, it follows that the change from the normal arch occurs at a point anterior to the second bicuspid, whilst the second bicuspid are known to correspond with the position of the second molars of the milk dentition. Thus it is shown

that the prognathism is not of the whole jaw carried forward on a horizontal plane, but is really intermaxillary or alveolo-sub-nasal in its character. Fourthly, it is a simple logical sequence of the process that produces intermaxillary prognathism, carried a step further during embryonic life, that produces double hair-lip and fissured alveolus. The specimens in the Royal College of Surgeons and the illustrations in our standard works on surgery, as well as the plates published by Von Ammon and Vrolik, amply prove that in double hair-lip the intermaxillary bone is carried forward by the vomer and the rest of the nasal septum ; and in many cases we know this is removed by the surgeon in operating for hair-lip, and we obtain afterwards the grooved centre to the alveolus with two canines, one on either side of the termination of the true maxillary process.

Arguing back from these cases of double hair-lip, to pre-maxillary prognathism, we can come to no other conclusion than that the duration and extent of the force operating upon the intermaxillary bone determines the nature and extent of the deformity that will be produced. I shall, doubtless, be met with the assertion that as the prognathism is not pronounced in early life, and as the union of the intermaxillary bones with the true maxillary bones is complete at this time, therefore it is impossible that the intermaxillary bone can be the subject of any subsequent change. Against this objection, I may say that as I have shown that intermaxillary prognathism is but a preliminary step in the deterioration of form that will produce in a subsequent generation (subjected to like conditions of propagation) double hare-lip, so we may assume that the general cranial development will in the two cases bear some relation to each other and that as we know (on the authority of Hutchinson) that in cleft-palate cases ossification of the sutures is delayed to a period far beyond the usual date, so in cases of intermaxillary prognathism the sutures would not be so much ossified as to oppose any sufficient resistance to the existence of the force originating in the sphenoid—a force that I at first asserted was the cause of the prognathism. From collateral evidence we know that many cases of prognathism are associated with such central lesions as will manifest themselves in the form of idiocy or imbecility ; and further, that the general configuration of the face is ape-like, from its diminished facial angle and retreating chin ; and we also know that in the apes the intermaxillary suture is not ossified till late in life, nor is the prognathism developed till after the primary dentition. Still further, we have it on the authority of Topinard that the skulls of the Merovingian race are the most prognathous of any

found in France ; and next we have it on the authority of French historians that the Merovingian dynasty was so debased in physical and mental development as to be known in their latter days as *les rois faineants*. It will, therefore, scarcely be straining the argument unduly if we assume that, as man by deterioration returns to the type of the higher apes, so, by the like process, he will, in his method of development, be subjected to similar conditions of growth and ossification. I do not, of course, wish it to be understood that all who have intermaxillary prognathism must of necessity be either idiots or imbeciles ; but I desire very distinctly to assert that such a deformity occurring amongst the highly civilized is a distinct mark of deterioration of stock, whilst it is differentiated from the normal prognathism of the Hottentots by the diminished intercuspid measurement of the highly-bred skull.

Intermaxillary upognathism is not so easily to be accounted for. It occurs in the offspring of apparently the robust ; but I think more extended observation will probably show that there is a scrofulous tendency on one or both sides of the ancestral tree, not that we have any very pronounced symptoms, but judging from the liability of the patient to certain diseases.

Thus we shall often find fragile nails, delicate hair, clear complexion, great physical beauty, combined with a constant tendency to disease of the tonsils, general relaxation of the mucous membrane, disease of the joints, and liability to phthisis. The facial angle will be good, and the chin pronounced in character, the lips will rarely be shut, thereby indicating the post nasal interference with respiration, and the nose will be either symmetrically small or divinely tip-tilted. Looking at the face as a whole, we should say that the nose was too small and the lips were too short, or that the rest of the face was too large for these two features. It really is the nose and mouth that are too small, and as we saw in the prognathous class deformity due to excessive development in this region, so we see in the present case deformity due to deficient development.

As to the primary cause of either the one or the other, we are, I think completely in the dark. From the sociological point of view, upognathism is not such a serious matter as prognathism, for I have endeavored to show that the one indicates a deterioration of stock that is in all probability progressive, whilst the other arises from a robust stock subjected to certain unfavorable influences that may from their nature be sooner or later eradicated.

The Lambdoid jaw, or V-shaped arch, as it has hitherto been called, seems to combine most of the features of deterioration that I have taken

as class distinctions in the other varieties. Thus the triangle is somewhat below the average from base to apex ; the base is beyond the proportionate length ; the interbicuspid line falls within the triangle ; and the general appearance of the front of the mouth is prognathous. This last condition is not, however, real, but simply apparent, owing to the peculiar arrangement of the teeth in their sockets, and not owing either to local or general prognathism of the jaw.

Although there is little question that all the other forms of jaw that I have described may be, and probably are, found in connection with congenital idiocy, yet it seems probable that this lambdoid jaw is connected with the most pronounced type of idiocy, namely, the microcephalic.

After carefully examining the works of various writers on the subject of microcephalic idiocy, there seems sufficient evidence to justify the belief that premature ossification of the sutures is the rule in the majority of these cases, and we may, therefore, assume, if we cannot absolutely conclude, that this influence operates powerfully in the production of the dental deformity known as the lambdoid jaw ; and this view is held by Virchow, but it is combated by Dr. Langdon Down and Dr. Ireland.

It would be extending the present paper beyond its proper scope were I to enter into the many interesting points opened up by the discussion of the present subject ; I must, therefore, leave them for some future occasion.

In conclusion, I have to thank my friend Mr. Charles Tomes for the assistance he rendered me in discussing the chief points of this paper prior to its presentation to this Society, and for some valuable suggestions as to the lines upon which further investigation might be pursued ; whilst to Mr. Willoughby Weiss I am indebted for the help he gave me in preparing my series of tracings of the skull.

DISCUSSION.

The PRESIDENT said they had to thank Mr. Coles for a very original and carefully-prepared paper. Unfortunately, the time usually occupied by the meeting had nearly expired ; he would, therefore, put it to the members present whether they would prolong the meeting or adjourn the discussion to another evening ?

Mr. WEST said that he was in favor of the adjournment of the debate. He had received his copy of the *Transactions* only that morning, and not having had time to look at it, did not know when he came to the

meeting what the subject of the paper was to be. He believed that it would be impossible to discuss Mr. Coles' paper profitably without having some opportunity for study and reflection.

Dr. WALKER said that with regard to what Mr. West had said respecting the late delivery of the *Transactions*, it must be remembered that the last meeting took place unusually late in the month (on the 12th) whilst this one was very early; the time available for the preparation of the *Transactions* had, therefore, been shorter than usual. With the rest of Mr. West's remarks he perfectly agreed, but he had to remind members that Dr. Lander Brunton had promised to read a paper at the next meeting, the discussion on which would probably fully occupy the usual time; he, therefore, proposed that the discussion of Mr. Coles' paper should be adjourned until the April meeting.

Mr. J. S. TURNER said he would cordially second Dr. Walker's proposition. Mr. Coles' paper dealt with a subject of considerable importance, and the paper itself was important from the amount of thought and labor which had been bestowed upon it. It appeared to provide a most useful system of nomenclature, and the deductions which Mr. Coles had drawn from his carefully elaborated facts were of the greatest interest. It was impossible to discuss such a paper off-hand, and he was decidedly in favor of the adjournment till April.

The PRESIDENT said that Mr. Coles' treatment of his subject was certainly novel, and the paper, dealing with a large number of facts and figures, was altogether a difficult one to follow. He thought that careful reading and study would greatly facilitate its proper discussion, and had, therefore, great pleasure in putting Dr. Walker's motion to the meeting.

The motion, "That the discussion on Mr. Oakley Coles' paper be adjourned until the April meeting," was then put and carried.

On the motion of the President, the thanks of the Society were voted to Mr. Oakley Coles and the other contributors during the evening.

The President then announced that at the next meeting Dr. Lander Brunton would read a paper on "Nervous Diseases Connected with the Teeth."

The meeting then terminated.

A CURIOUS DENTAL OPERATION.

[*From the Cincinnati Gazette, March 26.*]

Dr. Rosenthal yesterday performed the curious medical feat of grafting a colored man's healthy tooth in a cavity in a white man's mouth. It is well known that the teeth of colored men are sounder, as a rule, than those of white men, and cases like the above have occurred, though they are not frequent, for reasons that are easily understood. Yesterday, Dr. Rosenthal drew the teeth of a white patient, and immediately went down to the restaurant under his office, on Fourth Street, opposite the Grand Hotel, and found a colored man, with whom he bargained for one of his teeth at \$10. The colored man went up stairs, took his seat, had his tooth drawn, and received \$10. The tooth was then placed in the patient's mouth, where it is expected to take hold.

AMMONIA NITRATE.

I find a query respecting ammonia nitrate, its dose, etc. Now, it so happens that I have used that saline for about forty years. In 1840, before I could purchase the salt, I formed the theory of its value, prepared some, and used it to my satisfaction, and have used it ever since with increasing favor. The dose may be the same as that of potassa nitrate; it should not, however, be prescribed in the form of powder, as it is quite deliquescent. I use it as an antiphlogistic in all fevers and inflammations, internally, and externally as lotion or in cataplasm. I never knew it do harm. I have found it particularly appropriate in scarlatina, erythema and erysipelas. It is also diaphoretic and diuretic; in irritable bladder, strangury and all the forms of dysuria it is valuable, and as it is not so exhausting or depressing as nitrate potassa, it is more appropriate in the ataxic forms of fever, in diphtheria, and the like. I dissolve one ounce in alcohol one ounce, water two ounces; mix and stopple; this is a convenient form for extemporaneous use. In uretic disorders, I use spts. eth. nit. along with it. Indeed, it will go along with anything but mineral acids, its incompatibilities are so very few.

With cold water, mixing two to eight drachms to one pint, we form an eligible lotion for inflammation, etc., as above. And I am inclined to think that any judicious practitioner will approve and apply its use in cynanche, rheumatism, etc., etc.

Your most obedient,

Newton, Mass., March 3d, 1880.

Wm. F. TEULON, M. D.

INDIANA STATE DENTAL ASSOCIATION.

The Twenty-Second Annual Meeting of the Indiana Dental State Association will be held at Indianapolis, Ind., commencing June 29th, 1880, at 1 o'clock, P. M.

President, Dr. S. M. Goode; 1st Vice-President, Dr. Robert Van Valzah; 2d Vice-President, Dr. S. T. Kirk; Treasurer, Dr. Merit Wells; Secretary, Dr. W. H. Hall.

W. H. HALL, *Sec'y.*

ILLINOIS STATE DENTAL SOCIETY.

The Sixteenth Annual Meeting of the Illinois State Dental Society will be held at Bloomington, on Tuesday, May 11th, and continue four days. Dentists from other States are cordially invited to be present.

EDMUND NOYES, *Secretary.*

VANDERBILT UNIVERSITY.

NASHVILLE, March 4, 1880.

The Dental department of Vanderbilt University held its first commencement exercises in the Chapel of the University, Wednesday evening, February 25th.

The Dean, D. W. N. Morgan, reported fifteen matriculates, of which number the following five were entitled to the degree of Doctor of Dental Surgery :

A. T. KLINE,	Tennessee.
D. L. B. BLAKEMORE,	"
T. E. CABANISS,	"
R. B. LEES, M. D.,	"
J. H. WEBBER,	"

The address on the part of the Faculty was delivered by Prof. D. R. Stubblefield, and the valedictory by D. L. B. Blakemore.

Messrs. Herman & Morrison Bros., of Tennessee Dental Depot, offered two prizes : one for the best qualified second course student, and one for the first course student most proficient in all branches taught in the school. A. T. Kline received the first, an S. S. White Engine, and Mr. J. P. Bailey the second, a Whitney Vulcanizer.

MASSACHUSETTS DENTAL SOCIETY.

The Semi-Annual Meeting of the Massachusetts Dental Society will be held at 167 Tremont Street, Boston, Mass., on Thursday and Friday, June 3d and 4th, 1880, commencing at 11 (eleven) o'clock on Thursday. All interested in Dentistry are invited to be present.

Yours truly,

W. E. PAGE, D. M. D.,

Secretary Mass. Dent. Society.

CONNECTICUT VALLEY DENTAL SOCIETY.

The Sixteenth Semi-annual Meeting of the Society will occur at Savin Rock, Conn., June 17th and 18th (Thursday and Friday), 1880. Papers by prominent dentists of this and other countries will be read. Interesting clinics, etc. Savin Rock is but four miles from New Haven, on the Sound, readily accessible by beautiful carriage road, horse-cars, etc.

A. M. Ross, *Secretary.*

MY PATIENT.

In answer to some rhymes, entitled "My Dentist," published in the *Dental Miscellany* for December :

Who occupies my easy chair,
With pains that drive him to despair,
Which I remove with tender care ?

My Patient.

Who trembles, as he takes his seat,
And shakes with fear, from head to feet,
As I'm about his tooth to treat ?

My Patient.

And looks as gentle as a lamb,
But bites my fingers as I am
About to adjust the Rubber Dam ?

My Patient.

Who's fretful, peevish, never still,
Who tries my patience and my skill,
And always wants to have his will ?

My Patient.

When to his appointment late,
Who coolly offers to debate

The rise or fall of real estate ?
My Patient.

Who with naked fingers bold,
Tampers with the sparkling gold
He sees me from the book unfold ?
My Patient.

Picks his teeth with any plugger,
Calls the rubber dam, d —— rubber,
And, who invented it, a lubber ?
My Patient.

Who's ever ready to complain,
Tho' frankly saying "there's no pain,"
But that's the way they do in Spain ?
My Patient.

And, after all bad teeth I fill,
Who shakes my hand with hearty will,
But does not pay his "little bill ?"
My Patient.

MADRID, March, 1880. J. C. G.

JOHNSTONS'

Dental Miscellany.

VOL. VII.—June, 1880.—No. 78.

FALLIBILITIES OF SCIENTIFIC EVIDENCE, ETC., IN MEDICAL JURISPRUDENCE, ETC.

PART II.

BY A. C. CASTLE, M.D., NEW YORK.

1st Clown—How can that be? * * *

2d Clown—Why, it is found so.

1st Clown—It must be *se offendendo*; it cannot be else. * *

* * Argal, he that is not guilty of his own death,
Shortens not his own life.

2d Clown—But is this law?

1st Clown—Ay, marry is't. —*Hamlet*.

Our object in adding this, our second part, in continuation of "The Fallibilities of Scientific Evidence," published in the DENTAL MISCELLANY, Vol. II., 1875, is, that by bringing to notice the many errors in criminal jurisprudence which custom has led our people to suffer (in too many instances unrebuted), and by which the sense of right and justice is blunted and sacrificed, we hope to incite public attention to observing and investigating a subject that must then impress the mind of every individual of a people who love "fair play," and who will insist upon the administration of "even handed justice" in criminal and civil prosecutions.

The great interest attending original scientific investigations is infatuating, and however far the Professor, "playing to be wise," may allow his enthusiasm in experimental philosophy to carry him before his students, he

must remember, and the people must remember, if he is called to practical work before a Court of Justice, that he is not infallible, and not insist too positively on the accuracy of experiments. To do so is demanding *too much* latitude by which to sacrifice human lives in the sacred name of justice. In such cases the public sentiment is in no mood to be either astonished or perplexed.

We live in an age, or at least at a period, when apparently every branch of human knowledge is reduced to a popular as well as a scientific system ; when the most important sciences affect to put aside the garb of pedantry and mysticisms ; when, in fine, the access to information is open to every class and to every individual of both sexes. An advance in modern education so comprehensive and conspicuous must bear fruit with many desirable and most useful results.

The fact of the inexact character of our knowledge, in its relation with chemico-medical-criminal jurisprudence, ought not deter, but on the contrary should incite and extend our investigations, by which we may finally arrive at undoubted accuracy. It is true we have many industrious, faithful inquirers, many of philosophic mind, and that we may flatter our hope of finally, by their scientific research, so penetrating into nature that *innocence* will be a positive *protection*, and the *guilty* meet with the *penalty* of their offence.

Reflection upon this subject had warmed us to the point of collating and disseminating our observations, to demonstrate the errors which have crept in and are even established by unquestioned long usage in criminal jurisprudence, and in civil suits at law in our Courts of Justice.

We ask, in addition to our original question: Who ever discovered in the stomach or body supposed to have been poisoned, any other poison than the one poison suspected ? Echo has always answered—the one poison *suspected* ! The next question is : Who ever discovered, chemically or microscopically, any other blood than human blood suspected ? Echo again answered—human blood suspected ! These echoes represent the science and facts on record. Investigators have found the particular poison they have searched for, and they have seen the human blood in the field of the microscope they have looked for, or they have found none other that they can describe.

During the period of visionary chemistry, when the alchemist experimented for the purpose of transmuting the baser metals into gold, and to find the panacea for all ills, or a universal remedy, the study of alchemy did not flourish in vain. Although its chief object ended in failure, the pursuit of it was the means of various discoveries of real value to

chemical science, and supplied the present basis of our knowledge of metallurgy as a special science.

We place toxicological experimental philosophy with chemico-medical jurisprudence, in juxtaposition (although voluminous) with the chemico-experimental researches of the alchemists. The latter were like children playing along their garden or woodland rambles, who find pretty and strange flowers hidden under the brush or concealed by the high growing grasses, which ever after were remembered among their infantile discoveries. But the former, in their experiments to discover a suspected poison, have not gone from the beaten track—they still only smell at the apothecary's bottle or inspect his label. Mr. Bergh is reviled because he objects to cruelty to animals. The New York Solons in Assembly pass a law in favor of vivisecting animals for the benefit of science. Heaven save the mark!

An article of much interest to the Science of Medicine in connection with medical jurisprudence would be produced by an investigation to discover and record what benefit the vivisection of animals, and even of man, has bestowed on the "Theory and Practice of Medicine" and Surgery. It is true that, in a certain institution, some pseudo-scientists discovered *glucose* in a dog's liver. We have never learned how it affected the dog in life, or what effect it produced after death, as he died before the glucose was seen(?). We would add, that ever since the skinned legs of an unhappy frog quivered on a nail while hanging in Galvani's laboratory, that cold-blooded amphibian has been considered fair game by the students of science; its structure—physically, anatomically, pathologically—is *so* like that of man!!

"The glass of fashion, and the mould of form,
The observed of all observers."

It would puzzle the Bureau of Statistics to calculate how many of these unfortunates, whether as the transparent egg, the sportive tadpole, the solemn bullfrog, with a sense of family responsibilities resting upon him, have yielded themselves up as martyrs to the dissecting knife. The callow aspirant for scientific knowledge just entering a scientific hospital, hoping for the ultimate appendage of M. D. or D. D. S., after studying osteology, or rather the characteristics of "the bones" of the human frame, makes it his first "labor" to "dissect a frog;" and more than one student has declared, after weeks of careful work, with microscope, scalpel and micrometer, that there is more in a frog than he ever imagined, and that the blood could actually be seen circulating along its webbed feet. But, judging from recent scientific exploits, the frogs that

so utter their final croak never rise to the full significance of their being. It is reserved for those of foreign climes to lose their consciousness under the use of anæsthetics, and have it *restored* after they are dipped in freezing or boiling mixtures, or when they have been flayed alive. We are positively assured, however, by these skilled scientists and experimentalists, that the *least pain possible* to successful scientific investigation is inflicted, and that the knowledge gained is likely to be of service some time or other, in saving our own lives—when we return to the state of frogdom! Does not even Izaak Walton tell us, in sewing a frog on a fish hook, “to treat him as if we loved him”?

So long as the great questions respecting the *nerves* were discussed at the expense of the frogs there was nothing particularly alarming in the investigation, at least to the human race. But these professors of science never seem to know where to stop. Dogs have suffered. “Give me black dogs,” says the cruel old alchemist; “the white ones whine.” Rats and cats without number have been sacrificed in the glass bells of the chemist to test the power of his new-found vapors. There are monographs enough concerning expiring rabbits to make a library. There are as many volumes of experiments on pigeons, which is the more wonderful when we have permitted ourselves to believe that these beautiful, innocent creatures lived for months, and, indeed, *sometimes* recovered their *senses*, after their brains were pumped out. Then there is the guinea pig, an animal of such delicate nerves, that epilepsy can be produced by applying a current of cold air to the back of his neck; and the monkey that ate a comfortable meal after the great English experimentalist and natural philosopher had sawed off most of his skull and taken out a large part of the brain.

Man was no longer safe when the *monkey* suffered. And when we read Dr. Brown-Séguard’s lectures, we may ask, indeed, where will this thing stop? He has suggested performances that may lead to no end of trouble. Think of his advising the bald-headed and spectacled doctors who were listening to him to “*stand on one foot* with their eyes closed as a *test* of the soundness of *their brains*”! The doctor has assured us that, by proper manipulation, an arm that was cut off exhibited greater muscular power than when it formed part of its original owner. This is a remarkable result of the benefit to be derived from vivisection. The loss of a limb, “*cut off*,” by proper manipulation may be rendered still more powerful than when in its normal connection with the body; yet, very many persons have died, apparently, while in the full vigor of health and matured organization. Their bodies have been le-

gally and medically examined as to the cause of their sudden "taking off," without the remotest discovery of any of the phenomena related above; unless, indeed, the owner of the arm was a descendant of Galvani's frog.

A coroner's post mortem investigation, however, is not apt to extend into the meshes of medical jurisprudence or pathological science. The catalysis of the animal chemistry, affecting the vitality of the body by morbid and new and fatal combinations, sometimes produced by the action of adulterated articles of food, and by the poisonous admixtures introduced in manufactured wines, cordials, spirits, beer, etc., appear never to reach the requirements of official capacity. Even in cases of death caused by external violence, the coroner's inquest rarely wades beyond technical examination necessary to render a legal decision, and is generally based upon the speculative perceptions of evidence furnished by half drunken "detectives" (?)—who, as a rule, immediately upon "setting to work" and applying the science of their detective skill, plunge the whole *rationale* of the case into a chaotic state—an almost inextricable muddle.

Our attention was first aroused to the inaccuracies of scientific testimony by the incident of perusing the trial of Madame Lafarge, at the time published in the *New York Herald*, about thirty-five years ago. She was charged with having caused the death of her husband with arsenic conveyed in a cake.

Orfila, the distinguished toxicologist, and first among authorities (consulted), was the government expert retained in prosecuting and detecting the presence of arsenic. Orfila proved the presence of arsenic, very scientifically, in Monsieur Lafarge's body. Struck with the extraordinary inaccuracies occurring in the great toxicologist's analysis, we mentioned the circumstance to our friend, the late Dr. James A. Houston, then one of the principal attachés on the *Herald*'s editorial staff, pointing out that the tests used, and the mode of testing with them, would, of themselves, produce the exact results that Orfila was looking for and did obtain—the presence of arsenic. Dr. Houston, perceiving the force of our representation, requested us to write "a paragraph" upon the subject for the purpose of drawing attention to the importance of the oversight. This was done, and by the fortunate circumstance that it was published in the editorial columns, the paragraph attracted the attention of the *Paris Journal*, and was republished in *Galignani's Messenger*, which, still more fortunately, was the means of bringing the subject to the notice of Orfila himself, who immediately repaired to his laboratory and inves-

tigated his tests, etc. *He found that his analysis was wrong*, and that the criticism upon his testimony was correct and just. A new trial was obtained, and Orfila, now with chemically pure tests upon portions of the same tissues taken from M. Lafarge's body in which he had previously found arsenic, made a new analysis in the presence of the Court, jury, counsel and spectators, without being able to discover the sign of "*a trace*" of arsenic, and Madame was acquitted.

The uncertainty of expert testimony was again impressed upon our mind by the remarkable method accepted in a medico-legal trial, of ignoring chemistry altogether, and adopting microscopy in its place. This was in the case of Professor Webster, tried for the murder of Dr. Parkman. Previous to this trial the science of the chemist had been relied upon as beyond dispute—the only reliable and exact means for distinguishing the human blood from the blood of all other creatures, even to the distinction of the male from the female blood.

Our attention was now fully enlisted in the examination of expert testimony given in the name of science, and affecting the life, liberty and character of accused or suspected persons. Our views, at that time, upon the subject, were published in the *Boston Medical and Surgical Journal*, Vol. XLII., No. 10, p. 197, 1850; the editor of which favorably remarked that our "suggestions respecting the accurate scientific evidence in criminal cases are important and deserve the consideration of all medical men."

Returning again to the evidences of poison in the case of the recent trial of Kate Zell, convicted at Carlisle, Penn., for poisoning Mrs. Kiehl, W. F. Horn said that he had served three years in the laboratory, and attended lectures on chemistry one year in Dickinson's College; was employed afterwards for several months in an iron-master's laboratory in Philadelphia; since then has been a druggist; never found any arsenic in ores; does not know whether arsenic is found in iron ore or not; tested the contents of the stomach, intestines, etc., taken from Mrs. Kiehl's body, by Marsh's and Reinsch's tests, and found that they contained arsenic; found arsenic octohedral crystals in his test tubes, and arsenical discolorations on porcelain plates; didn't count the crystals; might, if he could live five million years to do it; was certain there were hundreds of them; knew they were arsenic by simply looking at them in the tubes with a microscope; did not move any of them for purposes of examination; did not know whether one-hundredth of a grain would produce all the evidences he had obtained of the presence of arsenic; pronounced arsenic in solution so nearly tasteless that it

would hardly be noticed without a person was tasting for it ; was positive he had thoroughly purified all his reagents ; did not know whether one-millionth of a grain could be detected by the Reinsch's test ; had found arsenic in the sediment of Mrs. Kiehl's two coffee pots—" lots of it" —but none in Mrs. Zell's ; did not think any of that arsenic came from the scrapings of the tin.

The following specimen of a legal hypothetical question of a supposititious case was then put to Dr. Herman : " Suppose (!) that the subject *was* a woman eighty-one years old ; that on Saturday, May 24, she was seen walking on the street in health and with as much strength as is usual for a person of that age ; that on Wednesday morning following she was well enough to walk out and look at a load of wood, and she has no visible signs of weakness ; and then after drinking of coffee or tea she is suddenly taken sick, after a while vomits very violently, and is sick and weakly until about two o'clock ; and then nothing is known directly of her symptoms or condition until next day, Thursday ; that on Thursday she vomits violently during the day ; that when next day, Friday, about eight or nine o'clock, she is lying as if perfectly exhausted upon the bed, her arms stretched out, one limb a little drawn up, and the other extended, her mouth wide open, her tongue out, moaning continuously, the moaning decreasing until she dies exhausted within a half hour after first seen ; that then the stomach and liver and part of the intestines are taken out, analyzed by a chemist, and arsenic found therein, what, in your opinion, was the cause of death ? "

" I think," replied the Medical Bunsby, " under these circumstances, that I would have thought she died from the effects of poison "; *and on this the prosecution rested.*

Any motive for Mrs. Zell's perpetrating the crime was not offered.

On the part of the defence it was contended that there was no evidence that Mrs. Kiehl died from arsenical poison, and two skilled experts, Professor Himes of Dickinson College, and Dr. W. T. Headen, an analytical chemist of Philadelphia, were examined, both of whom declared that the tests used by the young druggist, Horn, were unsatisfactory and insufficient, and that the traces of arsenic which he found might have resulted from the reagents which he used, and which he had not properly purified. The jury pronounced a verdict of guilty

The New York *Sun* of January 25, 1879, speaking of the scientific testimony about the poison in the case of Mrs. Cobb's trial, says : " We think the testimony about arsenic on the trial of Mrs. Cobb was put by the reporters as more decisive than it really was. We are well advised

as to the professional standing of Professor * * ; but his conclusions were dissented from by a chemist also of very high authority. The subject was abstruse and purely scientific, of which the jury were not supposed to know anything of themselves ; they were dependent entirely on the testimony of professional experts. That testimony—the evidence given by the different scientific witnesses—was so contradictory, it seems to us, as to raise a reasonable doubt, to the benefit of which Mrs. Cobb was entitled."

The recent excitement in New York of "copper-poison in pies," said to have caused the death of one, and the sickness of others, brings to our mind the case of Moreau, who was guillotined in Paris on the scientific evidence of Dr. Bergeron, who swore that the druggist's wife was poisoned by the sulphate of copper. *After* Moreau's execution one of the doctor's rivals in chemistry disproved his theories by taking himself a larger quantity of the mineral than Dr. Bergeron pretended to attribute to the case of poisoning in question. He has repeated the operation on several occasions since, when there was a necessity for demonstrating his theory that no one was ever poisoned, strictly speaking, by sulphate of copper—meaning that no person could be slowly killed by sulphate of copper. Moreau protested to the last that he was innocent.

COPPER IN THE HUMAN SYSTEM.—The presence of copper in the human system, stated to exist by *Orfila*, and which has been so often controverted, has been again asserted by *MM. Bergeron* and *Hote*. A careful incineration and analysis of the kidneys and livers, coming from fourteen human bodies, was made. In eleven cases sufficient copper was obtained to be weighed. The experimenters are of opinion that copper does not exist normally in the human system, but is due to the assimilation of this metal from the use of food cooked in copper vessels.

We deem it pertinent, here, to remark that rarely indeed—if ever—previous to the publication of the first part of these papers, had the employment of experts on behalf of the defence been adopted in criminal trials for capital crimes—demonstrating that tests used in detecting arsenic, etc., by their own impurities and other errors, produced the presence, in appearance, of the poison searched for. The paramount importance and justice of protecting the accused against the mistakes of *ex parte* analysis was most emphatically enunciated by the eminent counsel, Mr. Watrous, in the cause of the Rev. H. H. Hayden, that it "would only have been right, just and truthful, for accuracy in the cause of justice, that the experts engaged by the defence should have been

present, and allowed the opportunity of witnessing the analysis and microscopic investigations made by the prosecution."

A remarkable feature attending very many criminal trials is the overweening anxious intensity of experts to prove the accused guilty—or rather to prove the infallibility of their own position—apparently with a terrible egoism on their mind that their own professional reputation is on trial, rather than that the prisoner's life is imperilled. Such a seeming dread now exists lest such a result should appear, that it is of not uncommon occurrence (to render assurance doubly sure that an error is impossible to exist), that as a preliminary, voluntary information is offered to the Court, the jury and to the public at large, that the chemical purity of the tests employed in their analyses had been carefully analyzed and tested ; that the glass retorts, etc., used had been thoroughly examined, and that they were free from arsenic, lead, etc., in their texture ; that the earth from which the body had been exhumed contained no arsenic, etc. All this *voluntary* evidence is a result of *our* original suggestion, and was never thought of previous to our publishing the matter in the case of Madame Lafarge's trial. In addition to all this, we find occasionally—where zeal is permitted to overstep itself—the expert garnishes and emblazons the walls of the Court Chamber with huge maps of analytical instruments in philosophic combinations, with pictures of retorts, lamps, etc., and all the apparatus used—and not used—for analytical detection of poisons, etc. We have seen all sorts of mathematical and philosophical instruments so explained that *inexpert* pupils—after one lesson—can see objects without their aid, better than the experts themselves can, with their application. All these may be properly calculated upon to illustrate a lecture, and to impress the minds of an audience with the genius of the lecturer in the subtleties of chemical philosophy. The introduction in a court of justice, however, of this sort of testimony—*ad captandum vulgus*—pre-prejudicing the minds of the jury by diagrammatic postulates which demonstrate no other possibility than the presence of poison, so wonderfully to be obtained, is a gross wrong to the accused. With equal force they might attempt the explanation, on a blackboard, of the algebraical analysis of the calculus of variations, with the idea that any ordinary twelve men can understand the calculations or their deductions. But, fortunately, juries are "not always such fools as they look"—and they award the accused the benefit of their doubt.*

* Two trials of this sort cost the County of New York nearly ten thousand dollars; each analysis occupying over *four months'* time before the accused were brought to trial.

Since the employment of experts in behalf of the accused, our criminal courts would almost appear to be metamorphosed into a prize arena for chemical wranglers; armed with pictorial illustrations, supported by microscopic surroundings, sometimes in open violation of the science of the "ring"—the prosecuting expert "coaching" and prompting the prosecuting attorney with questions and quibbles to be applied to the cross-examined expert for the defence; questions that serve to perplex and confound his skill, and overturn the evidence he deems directed against his own *chemical ability* as a *capable expert*. The experts are now on trial, not the prisoner at the bar.

If these scientific proceedings do not impress the reader with a sense of their utter legal absurdity—we will leave their *moral* quality out of the question—perhaps the counter and rebutting evidence will at least so impress him. The experts are of undoubted ability and are truly scientific men. The experts on the part of the prosecution, to use the cricketers' phrase, have "the first innings"; they have been furnished with the stomach and its contents, the kidneys, the liver, the brain, etc., etc., all put up in jars, signed, sealed and delivered for their solemn exclusive inspection and analysis. First, they prove their own wonderful subtlety and skill, and then they demonstrate that their results must be correct, because none others than themselves have seen, touched or tested the several *viscera* which furnished the poison for which they searched. The accused on this evidence, doubtless, *is guilty*. Who dare question it? The expert for the defence, a truly scientific man, knows nothing whatever beyond the testimony of the prosecution he has heard orally given in court. All the questions offered him are based on the theory of chemical philosophy, suppositions, or *counterfeit facts*, upon which scientific deductions and philosophical conclusions are arrived at, exactly contradicting the prosecution. All of this could be avoided if the expert for the defence were permitted to witness the analytical work, or was afforded an opportunity to make an analysis for himself.

"But is this law?
Ay marry"—it isn't.

Upon this subject of expert evidence the *New York Times* says: "One of the medical experts" (in the case of Hayden's trial) "was constrained to admit, under cross-examination, that he could not say that there was anything in his science concerning which eminent members of the profession did not disagree. However disquieting this admission may be to our faith in doctors, a faith which proverbially has a somewhat

shifting foundation, it is still more significant in its bearing on the value of expert testimony. The *theory* is that expert witnesses are called to state certain established facts in science, or to explain certain technicalities which are beyond the knowledge of the ordinary citizen liable to be summoned as a juryman. The *practice*, in many cases, is that an expert is engaged on one side of a controversy, is liberally paid to present conclusions that shall benefit that side—and that side only. While another expert equally eminent is brought in to contradict his statements, and make science a witness on the opposite side. Thus Science is made to tell two irreconcilable stories and flatly contradict her own statements, without being liable to the pains and penalties of perjury. Meantime the honest juryman has not an easy task. He must sit in judgment on the competency of the experts themselves, and virtually decide on their relative merits as scientific men, before he can evolve from their conflicting statements the information he needed."

Herein presents the difficulty: It must be borne in mind, that however proper or useful the zeal of prosecuting officers may be in proceeding against criminals, the object of the State in pressing the trial, after all, is not persecution, but to reach *absolute facts*, and do justice as between the community and the accused. The State, as such, cannot share in the zeal even of its own advocates, or take pride in the conviction of its citizens, except that it be in answer to the righteous demands of equity. The most casual observer must perceive that expert evidence often prolongs trials to a needless extent, increases the expense for both sides enormously, and results in leaving the minds of the jury in much the same state, as regards the controverted points, as they would if no attempt had been made to enlighten them.

It is not necessary to impute mental reservations, or personal or mercenary motives, to eminent experts in medicine, or the other branches of science. But there are experts *and* experts, there are theories *and* theories, and there are *even* facts *and* facts in every department of science, or special knowledge, and lawyers can make their selection, giving prominence to some and keeping others out of sight, and twisting and turning what they use until the inexperienced mind confined in a jury-box is in danger of losing all faith in Science as a witness.

Experts in civil law, too, are chosen with a reference to certain conclusions which they are known to hold, on which they are ready to avow, and they are sometimes paid enormous fees with the understanding that they will testify in a certain way. Sometimes they are employed to make long and costly investigations for the express purpose of reaching results

favorable to one side. They are met on the other side with other experts selected and extravagantly paid for the special purpose of combatting and overthrowing the testimony of the expert on the other side—see the trial of “Cummings’” dental patent, for example. In criminal cases, physical symptoms, the phenomena of natural philosophy, poisonous substances, the animal tissues, rhetoric, logic, suppositions, propositions, hypotheses and objections by experts and counsel are hurled at each other’s heads with the shattering rush of a whirlwind ; the accused, all the time, like a secured block in the prisoner’s dock, is overwhelmed with the lashings of the angry, tossing mental breakers beating around him, and is for the time being lost sight of in their froth, until the “admitted” or “ruled out” decision calms the angry surgings which disturb the court-room.

To prevent these abuses, an eminent writer has inquired whether the employment of expert testimony, at least in cases involving the life or liberty of accused persons, should not be a judicial, rather than a forensic matter ; whether, under the authority of the court, and not under the manipulation of opposing experts, the scientific facts and conclusions needed should not be laid down by the jurists of the bench. We think not—this would never do. We have seen the injustice of favoritism sufficiently manifested to warrant us in saying no. Witness the manner in which referees are appointed, and “referee cases” managed and concluded.

19th ANNUAL SESSION
OF THE
AMERICAN DENTAL ASSOCIATION.

HELD AT NIAGARA FALLS, AUG. 5TH, 6TH, 7TH AND 8TH, 1879.

3d DAY—EVENING SESSION.

The Association was called to order at the usual hour, President **McKELLOPS** in the Chair.

“Operative Dentistry” was passed, and the Fifth Section—Anatomy, Physiology, Histology, Microscopy, and Etiology—was called.

Dr. **DEAN**, Chairman : Mr. President—At the meeting last year the various departments of study belonging to this section were appointed to different members ; but this year but two reports are offered, one by

Prof. Peirce, and one by your chairman. The latter paper I have called "Dental Physiology." I will found my report upon the "Origin of those Nests of Denticles, generally denominated 'Dentigerous Cysts.'" We do not pretend to have solved the question with absolute certainty, but your section will give its conclusions, and some of the histological and physiological facts upon which they are based, and will leave you to judge of their correctness. In glancing over the literature upon this subject, I find the only histological account of these anomalies of any value is recorded in the transactions of this Association for 1875. The mode, however, of the origin of these abnormal productions, as presented in that paper, is not in accordance with established anatomical and physiological facts; and yet the theory was an ingenious one, and the suggestions it contained, it seems to me, pointed very nearly in the right direction. The great initial error in the theory thus advanced was in regarding the tooth germ as a single cell, instead of an aggregation of cells. It was suggested in that report that a tooth cell in an abnormally active condition might generate other tooth cells, and from the latter these partially developed teeth might originate. I will submit the following facts as the foundation of the theory here proposed: The enamel of the teeth is developed from an epithelial or epi-blastic layer. The enamel organ penetrates the embryonal tissue, and becomes largely developed before the slightest trace of dentine papilla is seen. Now there are many facts to bear out the theory that the development of the papilla is induced by and through the presence and influence of the epithelial layers which constitute the enamel organ. Keeping this theory in view, let us look at some histological facts. Upon examining some subjects soon after the rupture of the epithelial cords which had connected the dental follicles with the epithelial layer of mucous membrane, large masses of epithelial cells will be found attached to their extremities, and sometimes detached aggregations of these cells are found scattered in various directions in the embryonal tissues. These epithelial proliferations vary greatly in quantity, and usually disappear before the teeth are fully developed. From the foregoing it will be premised I base my theory upon the origin of these epithelial masses, and I believe that under favorable circumstances, more or fewer of them become imperfect enamel organs, inducing the development of corresponding dentine papillæ, and also that these two tissues may pass through the successive phases of development of the normal dental organs.

It is not necessary for me to elaborate this idea further. I will therefore only allude to a fact or two which I think corroborates this view.

We find that the development of teeth is not confined to its legitimate region, but may be produced in various and remote parts of the system, the bladder, the scrotum, the vagina, the eyebrows, etc., and in the ovaries. These are well known facts, and these abnormal dental growths are admitted to result from some epithelial cells which have become invested in the dermal tissues, which more naturally occur in the jaw than in the remote regions named.

This brief statement of facts and the conclusions which we have drawn are respectfully submitted to the consideration of this Association.

Dr. C. N. PEIRCE expressed regret at his inability at the present time to present to the Association a synopsis of the labors of the German histologists during the past year upon cell development, for he understood that much in that direction had been accomplished, and said: I have had the great pleasure of reading the proof sheets of a work which was mentioned in the report on "Literature," and I feel it would not be out of place to state here the intense satisfaction that these proof sheets gave me, in looking over and noting the thoroughness with which the origin of the tooth germ and its subsequent development was brought out in that work, which will be before the public in a few days; and I trust every dentist who has a student will not fail to procure that work, and see that his student is well acquainted with it before he leaves his tutor. It is especially adapted to the student by the familiar conversational style in which it is written. I refer to the work on "Dental Follicle" about being issued by Dr. M. S. Dean, and Drs. Legros and Magitot are the authors. It has been translated by Dr. Dean, with some additions from his pen.

Dr. J. G. W. WARNER, of Boston, read a paper entitled "Some Physiological Observations on Nitrous Oxide." My original intention was to present a private paper on the physiology of nitrous oxide. I have been unable to condense in a compact form what I intended to say, but I have a few headings upon the blackboard here, upon which I intend to make a few remarks. I will say that whatever there is in the remarks I shall make under these headings, that will give practical information to the dentists, is to be credited to Prof. Zuntz, of Poppelsdorf, the German physiologist, and are his conclusions, after thorough and extensive experiments in his laboratory. In the first place, we notice that nitrous oxide narcotizes; which is shown in the increased frequency of the heart's action, and the increased frequency of respiration. In the second place, it asphyxiates, which is shown

by the fact that when inhaled the power of reflex action is lost. It has been considered among the dental profession generally (with the exception of a few), that nitrous oxide has no other effect except that of asphyxiation; but that this is not so is clearly shown by the fact that when animals are placed under the influence of nitrous oxide they lose the power of reflex action in a very few minutes. Therefore we establish the fact that nitrous oxide first narcotizes; second, asphyxiates. Under the third heading we notice that complete anæsthesia is produced by nitrous oxide by the combination of narcotism and asphyxiation. When we have complete anæsthesia—a complete painless condition of the system—we have a combination of narcotism and asphyxiation; we do not have narcotism in itself alone, nor asphyxia in itself alone, but a thorough combination of these two principles. Under the fourth head we notice that in asphyxiation produced by inhaling nitrous oxide convulsions and the feeling of want of air are very much less than in cases of common asphyxiation, though if we closely observe, we will notice that there will always be some convolution of some muscles, those of respiration principally. In the fifth place, we have three characterized periods, which should be known to every one who administers nitrous oxide. The first period is that of predominating inspiration, in which the subject inspires very freely; the second, of predominating and forcible expiration; the third, wherein gradually lessening and fainter growing inspirations appear, until a definite respirorial paralysis is established. In other words, when you administer nitrous oxide, you will observe that the individual starts with taking the gas very freely for the first few inspirations; in the second stage he will do the very opposite—he will blow all the air out of his lungs that he can get out; in the third stage he will take very fine, quick inspirations—gasps—and will hardly exhale at all. In the sixth place we will notice the frequency of cardiac systole and diastole. The principal fact that will be noticed here is, that when breathing pure nitrous oxide gas, the frequency of the heart's contraction and dilatation decreases from the beginning, but not nearly so much as when we inhale an undifferentiated gas. Under the seventh heading we will notice the two periods of increased blood tension. That there are two periods of blood tension should be known to every one who administers nitrous oxide, in order that he may know when, if ever, it becomes dangerous. The increase of blood tension, which is characteristic of all asphyxiation, appears under the influence of nitrous oxide in a two-fold manner, though seldom reaching a dangerous type. The point at which it actually becomes dangerous is

the secondary blood tension, which is noticed on the recovery of the patient. Oftentimes there are more than two decided effects following each other ; first there will be an immense contraction, and then a dilatation, and these vary in kind and degree. The eighth division treats of the danger from apoplexy. This is the last and perhaps the principal point I wish to bring out, but it is one which touches every one of us who administers nitrous oxide. There is danger in every one of these periods of increased blood tension, and more especially, as before stated, at the period of recovery, when the individual comes out of the condition of anæsthesia and narcotism ; and this danger often rises to such a degree that there is a predisposition on the part of certain vessels to dilate very freely, and from which the patient may never recover. We all have heard stories of people who have taken nitrous oxide, and of whom it has been said that they have never felt exactly as they did before they took it. Undoubtedly they have been narcotized by the gas to such an extent as to have brought about a tendency to very free dilatation of the vessels and heart; and in any system where there is a predisposition to apoplexy nitrous oxide seems to be decidedly contraindicated. But we must still come to the conclusion that as nitrous oxide has been considered, and is so considered to-day, the anæsthetic par excellence of the dentist, and which is used hundreds of times every day, and which perhaps every one of us uses more or less, and of which we have less fear than any, it is, comparatively speaking, a very safe anæsthetic ; and the people who take nitrous oxide mostly are not the people who inherit a predisposition to apoplexy.

REGULAR MONTHLY MEETING OF THE BROOKLYN
DENTAL SOCIETY,

HELD AT THE OFFICE OF DR. O. E. HILL, MONDAY EVENING, MARCH 8, 1880.

President Dr. C. D. Cook in the Chair.

INCIDENTS OF OFFICE PRACTICE.

Dr. THOMAS FRY exhibited to the Society a saliva pump which he had devised, claiming that it was very simple in construction and effective in its working.

Dr. FRY : I have here a cuspid tooth that I lately extracted from the mouth of a lady forty years of age. It had never erupted. You will see that it has a foramen at each end. It was entirely covered by the

gum. I cannot say whether or not the patient had ever had an erupted cuspid on that side of the jaw.

Dr. O. E. HILL: I have here several glass tubes which have been filled with various amalgams. I am not prepared to speak of the practical value of these experiments, but they seem of some importance as showing the difference, in respect to leakage, which they present. Of quite a number tried only two or three stood the test of leakage when violet ink was poured upon the fillings in the tubes, most of them permitting the ink to pass visibly and readily.

Every care was taken to pack the amalgam the same as would be in filling a tooth.

I also made several fillings in the same way with the oxy-phosphates; in fifteen minutes after they were put in they could be readily shifted up and down in the tubes, but they did not seem to leak much. What is the reason for that?

If any gentleman thinks he can fill one of these tubes with gutta percha so that it won't leak, I should like to see him try it.

Dr. FRY: I think I can do it.

[Materials were provided and Dr. Fry filled a tube. Dr. Hill applied the test and the filling showed unmistakable leakage.]

Dr. FRY: If I had been allowed to use a solution of Canada balsam, as I do in practice, I think the filling would not have leaked.

Dr. A. N. CHAPMAN: What proportion of gutta percha fillings placed in the teeth would stand such a test?

Dr. C. F. IVES: This subject of amalgam has to be ventilated about once in so often. I venture to say that scarcely two dentists would manipulate amalgam in the same way, and perhaps this may account for some of the difference in results attained.

I have found better satisfaction in my use of Fletcher's amalgam than with any other which I have tried; I speak of his gold and platina alloy. If there is anything better I would like to have it.

Dr. HILL: The objection to Dibble's amalgam—if it be an objection—is that it hardens very rapidly; it certainly does not leak in this glass tube. Gentlemen speak of using amalgam very dry, in the "form of a powder." When the cavity to be filled is in the upper jaw, say on the posterior surface of a molar tooth, I confess it is a little difficult for me to use it in that form!

Dr. A. H. BROCKWAY: There are amalgams and amalgams; some that seem to serve a very good purpose, and others that are nearly worthless.

I have sometimes questioned whether the makers of amalgam were not seeking to produce a pretty looking article at the expense, possibly, of more important qualities, to wit: the property of saving teeth. Observation has seemed to show that the amalgams which tarnish or blacken on their surface, generally preserve the teeth better than those which do not, so that when I see in the mouth a filling that has become nearly black I expect to see one that has preserved the teeth.

Now there is an amalgam sometimes used, made of palladium and mercury, that turns almost jet black, and neither shrinks nor expands, and I believe will preserve a tooth perfectly. I am inclined to think that a copper amalgam would do the same. It would, except where subject to friction, turn of a greenish black color, but I should expect it to make an excellent preservative filling. I see no objection to its use, except on the score of appearance, and, as I have intimated, the appearance of amalgam fillings should be considered of secondary importance, since they are generally placed in unexposed positions in the mouth.

Dr. W. A. CAMPBELL: I saw an amalgam filling nineteen years old on the side of a tooth, and it was as bright as a pin.

Dr. FRY: In regard to the experiment with gutta percha in a glass tube, as just tried by me and tested by Dr. Hill, I think the result arose from the different expansibility of the glass and the gutta percha. Practically, in a tooth, I think that the expansion of the gutta percha being relatively greater, would result in making a perfect fitting stopping.

Dr. HILL: If gutta percha is heated to any considerable degree in filling a cavity it will contract afterwards to an injurious extent. It should be put in nearly cold, and after the cavity is full wet a piece of tape in chloroform and draw it carefully over the filling and then let it alone.

I wish to say just here, that in filling with any material the salvation of the tooth after all rests almost entirely upon the burnishing given to the filling; it is my experience that the burnisher saves more teeth than the plugger.

Dr. MIRICK: These experiments, it seems to me, bring us to the conclusion that it is not necessary to put in tight fillings, because we can see from them that the majority of fillings put in the teeth must be leaky. I don't believe that if gold fillings were put to the same test we should find one in a dozen but what would leak. We have all seen those old gold fillings which would seem to have been made by simply ramming

a ball of foil into the cavity without much attempt at solidity, and when we have taken them out we have found the cavity free from decay and the tooth perfectly preserved.

Speaking of gutta percha, I had to-day a patient who had in her teeth fillings of this material that had been in for years; they had worn off considerably, but they had preserved the teeth, and yet, according to the experiments given they must have been leaky. Now is it essential that a filling should be perfectly tight?

Dr. BROCKWAY: It seems strange that such a question should be asked after the exhaustive treatment of this subject which we have had in the past few years from Dr. S. B. Palmer and others. He has shown very clearly, as I think, why it is that a leaky filling may preserve a tooth, if made of a certain material, when it would fail to do so if made of a different substance. The reason is very clearly stated in an article on "Secondary Decay," which may be found in the January number of the *Cosmos* for the current year.

In accordance with these teachings it will be seen that a filling, if made of a material nearly related in the electrical scale to tooth substance, may be imperfect, and yet to a great extent prevent decay from going on; or, if the filling should vary to a considerable degree from electrical harmony with tooth substance, and yet readily oxidize or otherwise tarnish, it will retard, if not wholly prevent decay, even though it may be imperfect: but if the filling be of some substance like gold, which differs greatly from tooth substance in the respect named, and does *not* tarnish, then it is essential to a prevention of continuance of decay that the filling be practically water-tight.

Dr. MIRICK: I take exceptions to Dr. Brockway's opinion that decay will always go on with leaky gold filling. We all know that in a great many cavities where the fillings were imperfectly put in, they have preserved the teeth.

Dr. BROOKS: I do not think the glass tube is a fair test for the amalgam, because when placed in the mouth the amalgam gets warmer and expands, while the teeth do not expand; this tightens the filling and prevents leakage.

Dr. HILL: As to that theory I would say, many people drink hot tea, and about three minutes after they drink ice-cold water: now does not that affect the filling of the teeth, by causing it to expand and shrink? The glass tube test is only a comparative one as between the amalgams under precisely the same conditions. I don't know

of any other way to test them. If an amalgam will shrink in the tube, I see no reason why it should not shrink in the mouth.

Dr. BROOKS: It has been said that hot tea would expand the tooth; I do not see why it would not expand both tooth and amalgam.

Dr. HILL: Does tooth substance expand in the same ratio with metal?

Dr. BROOKS: I believe not. I should think the amalgam would expand most and therefore keep it tight.

Dr. COOK: Is a filling considered a dry filling where there is an excess of mercury to be wiped off with cotton, after it is put in the cavity? If so, it is not my understanding of a dry filling.

Dr. DOLBEAR: I wanted to ask Dr. Ives what the effect would be to warm the instrument when packing amalgam?

Dr. IVES: To bring the mercury to the surface, but it would not make the filling any better. My interpretation of a dry amalgam filling is a perfect powder—one where there is no excess of mercury whatever—in which it is exceedingly difficult to find the least trace or sign of it.

Dr. HILL: That reminds me: in using Dr. Dibble's amalgam I have used very little of it in the mouth; but I have not had an excess of mercury in any filling. That is one feature of that amalgam I forgot to speak of.

Dr. MIRICK: Dr. Clowes has always been considered the great amalgamist, and I know that he does not believe in these very dry fillings. I have heard him express himself so in the Societies. He does not see, if one is going to make an amalgam filling, why he need to make it without mercury enough to effect a perfect amalgamation.

The Society listened with interest to an original poem upon filling materials, composed and read by Dr. F. W. Dolbear.

Adjourned.

AMERICAN DENTAL ASSOCIATION—NOTICE.

All should bear in mind that the meeting of the American Dental Association is to be held at the Institute of Technology, on Boylston Street, Boston, August 3d, 4th, 5th and 6th. Hotel accommodations at the Brunswick. The Committee of Arrangements will give us particulars for next month's issue. We have word from Detroit that extensive arrangements have been made with the railroads looking to a grand excursion from Detroit for such as choose to come East, and we expect to publish particulars of this excursion in this number.

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY,
OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, March 1st, 1880.

ALFRED WOODHOUSE, Esq., President, in the Chair.

The Minutes of the previous Meeting having been read and confirmed,

Mr. JAMES MERSOM signed the Obligation Book and was formally admitted to membership by the President.

The following candidates were then separately balloted for, and were all elected members of the Society, viz.:

W. A. MAGGS, L.D.S., Eng., 12 Albert Street, Regent's Park;

GEORGE PEDLEY, M.R.C.S., Eng., 30 High Street, Borough;

FRED. JOSEPH BENNETT, M.R.C.S., Eng., 17 George Street, Hanover Square, as Resident Members: and

CHARLES FARNSWORTH, L.D.S., Ireland, Oxford Street, Manchester;

ARTHUR TAYLOR, L.D.S., Eng., Belle Vue Terrace, Belle Vue Road, Leeds; as Non-Resident Members: and

JOSEPH ISZLAI, M.D., M.S., &c., of Buda Pest, as Corresponding Member.

The PRESIDENT announced that Mr. Leonard Matthison, of Oxford Road, Manchester, had been duly proposed as a candidate for membership and would be balloted for at a subsequent meeting.

Dr. WALKER then read the following communication: With your permission, Mr. President, I will allude to the fact that in daily practice we are frequently called upon to give an opinion as to the probable duration of a swelling in the maxillary region. The following case may prove to us how hazardous a hasty opinion may prove to be:

A man, aged thirty-five, consulted me, but apparently with great repugnance and indifference, stating even before he had made a foot's entrance into my consulting room, that if his medical man had not refused attendance until he had consulted a surgeon of our specialty

and supported this by a threat of discontinuing his treatment altogether, he would not have come to town, as his teeth had been examined many times before and found quite sound.

On inquiry, I ascertained from the patient that twelve months previously he had experienced great pain in the left side of his face and head. After a few days this was followed by throbbing and dull heavy pain in the whole of the superior maxillary region. In a few weeks from the date of the first attack, pain in the left ear and the region of the temporal bone supervened and continued for weeks, with swelling over the mastoid cells under the sterno-mastoid muscle: resulting in due time in a large abscess, followed by several smaller ones, in the same region; debility, and weakness of the general constitution, consistent with the formation of pus. This was succeeded by occasional indistinct vision in the left eye, which increased until he lost the sight.

He had taken several months' rest with total cessation of all business and frequent changes to the seaside, but with no beneficial result.

On examination, the left eyeball was of a different color to the right; there was no apparent swelling in the region of the superior or inferior maxilla. There were cicatrices over the mastoid cells, but no accumulation of pus.

The hard palate appeared quite healthy; there was slight redness around the margins of the first and second molars; only very slight fullness between the facial muscles and the maxillary bone; no tenderness on pressure. On careful inspection and examination of the teeth, with the assistance of the mouth mirror, all the teeth appeared sound. No discoloration was apparent, even with a strong reflected north light. On digital examination (with the head firmly grasped) all the teeth were quite firm, except the second left upper molar. In this tooth I could feel distinct motion, but with no visible signs of elongation. On introducing a hard substance between the upper and lower teeth and applying severe pressure by the heavy closure of the jaws, the second molar jaw gave no signs of tenderness. By isolating the second molar with prepared cotton wool placed around the other teeth, and the injection of cold water with a large syringe, a paroxysm of severe pain was the immediate consequence. On extraction of this tooth, one ounce of pus passed into the mouth through the palatine socket. In this case, the palatine fang of the second molar had perforated the floor of the antrum; obscure caries on the posterior proximal surface of the tooth had generated pus, which accumulated in the antrum, then passed back through

in case opii, and aqueductus fallopii to the ear, and under the sterno-mastoid muscle, pointing to the surface. Or, by absorbing a portion of the hard palate, the pus might have passed through the posterior palatine canal into the spheno-maxillary fosse, then through the spheno-maxillary fissure. The patient made a good recovery, with perfect restoration of sight.

The PRESIDENT remarked on the interest of the case and the difficulty of the diagnosis, and complimented Dr. Walker on the clearness with which he had demonstrated the probable course of the pus on his prepared specimens.

Mr. SEWILL said there was one statement in the very interesting communication which Dr. Walker had just read which he was not disposed to accept without further evidence, viz., that the pus did actually travel to the petrous portion of the temporal bone by way of the canals which Dr. Walker had enumerated. He thought it much more probable that the pus had passed along the bones externally, burrowing in the usual way under the muscles and fascia; especially since there had been no interference with the function of hearing, which would probably have happened had the bone been the seat of an abscess. So, also, he thought that the effects on the eye might be more easily explained by supposing that the pus in the antrum had exerted upward pressure on the floor of the orbit, rather than by the actual presence of pus in the orbit. Had this been the case, considerable disorganization of the contents of that cavity must have resulted, and there would not have been such a rapid recovery after the evacuation of the matter; whilst, on the other hand, very similar symptoms might be observed as the result of pressure in cases of tumor of the antrum. But these criticisms did not in the least diminish the interest of the case, nor could they lessen the credit due to Dr. Walker for having correctly diagnosed such an exceedingly obscure case.

Mr. GADDES remarked that the influence of the nervous system in exciting purulent secretion on parts remote from one another must not be lost sight of. It might be that in this case the presence of pus in the neighborhood of the ear had been due to the transmission of a reflex nervous impulse, and not to the actual traveling of matter from the superior maxilla to the temporal bone.

Dr. WALKER said that a detailed reply to Mr. Sewill's criticisms would take up more time than could be spared that evening, but he might state that this was not the first case of the kind which he had met with. On several occasions patients had been sent to him by ophthalmic surgeons.

who had detected the presence of pus in the orbit and had found it to be due to disease of the teeth or palate. He would, on a future occasion, give particulars of four or five cases in which pus had traveled to considerable distances through the bony canals of the skull, and he thought he should be able to convince Mr. Sewell that what he had supposed to have occurred in this case was neither impossible nor improbable.

Mr. MAGOR showed a left upper wisdom tooth which had been sent by his father for presentation to the Museum. It was very small and deformed, resembling a supernumerary, rather than a third molar. The patient, a lady of about forty years of age, had suffered for some time from severe neuralgia of the left side of the head. This tooth was found to be carious ; it was extracted and the pain ceased.

Mr. BROWNE MASON then related the following case : A young man running across a wet lawn slipped and fell with great force, striking his upper incisors on the edge of a stone step. When he came to Mr. Mason the left upper central was found to have been driven quite up into the alveolus ; the right central had a portion of its crown broken off ; the outer plate of the alveolus was fractured from canine to canine ; the left lateral, although still in its socket, was so loose as to threaten to fall out on the slightest touch, and the other incisors were very loose. Mr. Mason brought down the central incisor with a small pair of forceps, and obtained a very fair impression of the whole upper jaw in godiva wax, taking care that the teeth should not leave their sockets during the operation. He then made a temporary splint of the same material to keep the teeth in place during the three hours necessary to produce a splint of celluloid. This was made to fit closely to the lingual and labial surfaces of the incisors and canines, and passed back and round the last tooth on each side of the jaw ; it was retained by ligatures tied to the second bicuspid on the one side, and to the first (the second being absent) on the other. The accident occurred on February 18th, and the patient had since progressed very satisfactorily ; of course, he was still wearing the splint, and would continue to do so until the teeth were quite firm in their sockets.

The PRESIDENT then called upon Dr. Lauder Brunton to read his paper.

ON NERVOUS DISEASES CONNECTED WITH THE TEETH—BY T. LAUDER
BRUNTON, M.D., F.R.S.

Mr. President and Gentlemen :

The pain of toothache localized in a decayed tooth is unfortunately so common that every sufferer diagnoses it for himself, and

although it may be reckoned amongst the nervous disorders connected with the teeth, I need not say anything about it.

But toothache may be associated with other pains, or may even be replaced by them, and then the diagnosis is by no means so easy. The true cause of the pain may, indeed, remain unsuspected even by competent medical men, and their treatment may consequently be comparatively ineffectual. My attention was first drawn to the connection between decayed teeth and nervous disorders having little or no apparent relation to them by an incident which occurred a good many years ago, when I was a student. I had just heard that one of the best means of relieving toothache was to insert a pledget of cotton wool, dipped in melted carbolic acid, into the cavity of the aching tooth, care being, of course, taken to squeeze out the superfluous acid and to cover the pledget with some clean wool so as to protect the tongue. I was very anxious to test the information I had received, and shortly afterwards an opportunity presented itself. A maid-servant had complained for some days of headache in the left temple of a severe neuralgic character, and associated with this was a certain amount of toothache, which was, however, less complained of than the headache. I plugged the offending tooth with cotton wool dipped in melted carbolic acid, but was greatly disappointed to find that it produced little or no apparent benefit. In less than half an hour, however, the girl informed me that the pain in the temple and the toothache were both entirely gone. Their disappearance was not due to the carbolic acid having required time to exert its action, but to its having been applied to a different point. The girl had taken it out of the cavity of the decayed molar into which I put it at first, and transferred it to another tooth, of which she had not complained, and which I had not suspected. Immediately the pain disappeared, both from the tooth and the temple.

In this case pain was felt in the tooth as well as the head, and the headache might be looked upon as simply irradiation of the pain from the tooth. But that headaches may occasionally depend upon caries of teeth in which no pain whatever is felt, is, I think, shown by what once happened in my own case. I had been suffering from migraine, the pain being limited to a spot in the left temple. There was tenderness on pressure on one spot below, and in front of, the parietal eminence. On several occasions I had noticed that the left eyeball was tender on pressure; but one day I was suffering from headache, and yet found that the eyeball was not tender. I pressed my finger all over my face in the endeavor to find a second tender spot, and at last I found one under the

angle of the jaw. But the tenderness here was due to a small gland, which was hard and painful to the touch. Hardness, enlargement and tenderness in a gland generally indicate more or less inflammation in it, and the most probable cause of such a condition is, of course, the irritation excited in the gland by foreign matter conveyed to it by the lymphatic vessels. I accordingly began to examine the mouth and teeth from which the lymphatic vessels proceeded to the gland in question. Nothing abnormal was to be noticed in the lips, cheeks, tongue or gums, so I tested the teeth by percussion with a blunt steel point, and on the posterior aspect of the last molar on the left side of the lower jaw I found a spot which was very slightly tender. I accordingly went at once to a dentist, and learned that caries had just begun at that spot, but had not caused any cavity whatever. I had never suffered the least pain in the tooth, and but for the headache which led me to percuss the teeth systematically, I should, in all probability, never have suspected the caries until it was far gone. The connection which was here found to exist between temporal headache and a decayed tooth is, I think, interesting, not only as showing a casual relation between the caries and the headache, but as helping to explain the pathology of migraine.

A good deal has been written on this subject, and there is a considerable diversity of opinion amongst different writers. Professor Du Bois Reymond, who suffered a good deal from it, attributed it to spasm of the vessels, for he found that, during the pain, the temporal artery became tense and hard, like a piece of whip cord, and the pupil of the eye on the affected side dilated as if the sympathetic in the neck had been irritated. Others have discarded this explanation, because they found that the vessels, instead of being firmly contracted, were distended widely and throbbed violently, and they have attributed the pain in the head to the congestion of the vessels.

These two explanations of the pain of migraine, the one attributing it to anæmia, and the other to congestion, are apparently irreconcilable. My own case gives, however, I think, an explanation of the discrepancy. Both statements are correct, but both are incomplete, and the reason is that their authors have only observed the arteries during a part of their course, instead of tracing them backwards to the large trunks from which they sprang and onwards to their smaller ramifications. In my own case, I have found that on some occasions the temporal artery was hard and contracted like a piece of whip cord, as described by Du Bois Reymond. On others I found the temporal artery widely dilated and pulsating violently, and yet I could distinguish no difference between the

pain I felt on these different occasions. So, not contented with noting the condition of the temporal artery only at its middle, I followed it onwards to its smaller branches and backwards to the carotid.

Then I found that a constant vascular condition existed during the headache, notwithstanding the apparent differences in the state of the temporal artery. This constant vascular condition consisted in dilatation of the artery at its proximal, and spasmodic contraction at its distal, extremity. The carotid artery was almost invariably dilated and throbbing. Sometimes the dilatation would extend as far as the trunk of the temporal artery, but sometimes the temporal was contracted. Even when the temporal artery was dilated, if one only followed it to its smaller ramifications, they were found to be firmly contracted and cord-like. If one may reason from this single instance, connecting as it does the examples of vascular dilatation and contraction given by other authors, we may say that the pain of migraine depends neither on contraction nor dilatation of the vessels *per se*, but upon dilatation of the one part of the vessel with spasmodic contraction of another, or, if we might so term it, upon a state of colic in the vessels themselves. This irregular contraction of the vessel is almost certainly due to disordered vaso-motor innervation. The cause of this disorder is to be sought in the sympathetic system, and the observation of Du Bois Reymond regarding the condition of the iris may lead us to connect it with the cervical ganglia. From these ganglia vaso-motor fibres proceed along the carotid and its branches, and if we regard disorder of these ganglia as the cause of migraine, we are at once in a position to explain some of the symptoms which occasionally accompany it. Thus, I have observed that sometimes the pain in the temple would suddenly cease and be replaced by pain in the occipital region. Sometimes, also, we have affections of the sight, such as general dimness of vision, diplopia and spectra—colored or uncolored. The transference of pain from the temple to the occipital region is probably caused by transference of the spasmodic contraction from the temporal to the occipital artery, and the disorders of the sense of sight we may reasonably regard as caused by alterations in the intercranial branches of the carotid, similar to those which we can detect by the finger in its temporal branch. The disturbance in the sympathetic system, which I regard as the cause of migraine, may not always have its origin in the teeth; it may, and very probably does, sometimes originate in the eyes, but in the instance which I have already noted as occurring in my own case, the irritation started from the lymphatic gland, on or about which branches of the sympathetic probably ramified.

The tooth itself, although the real cause of the sympathetic irritation, did not produce it directly, but indirectly. From the root of the tooth the lymphatics conveyed irritating matter to the gland, and the irritation here excited acted in its turn as a disturber of the sympathetic nerves which furnish the vaso-motor supply to the carotid and its branches.

The connection between dental caries and neuralgia was first noticed by Neucourt,* and he gives rules for diagnosing a causal relation between caries and neuralgia. When the pain, which is at first widespread, gets localized in the course of a few days in the dental region, and is succeeded by redness, swelling and tenderness on pressure of the gums, the neuralgia is almost certainly of dental origin. In these cases the patients are restless, and the pain is more or less constant, with no distinct intermissions ; the pulse is more frequent and hard, and there is not unfrequently sweating. If the pain is followed by a gumboil, the tooth, he thinks, is certainly decayed, although it should present no appearance of caries, and this he considers to be also the case if the tooth appears longer than the others and is painful on percussion. Tenderness on percussion is considered by Richter† to be the most certain sign. The diagnosis may be assisted by noticing whether the neuralgia when disappearing lingers longest in one of the teeth.

The exact pathology of neuralgia has not yet been settled, but Valleix, one of the great authorities on the subject, gave as its distinctive points the presence of spots which were tender on pressure and the effect of pressure in increasing the pain. These spots have been noticed by Neucourt‡ in neuralgia depending upon dental irritation, and he has also observed the absence of increased pain on pressure in true neuralgia, so that no distinction can be drawn between neuralgia due to dental irritation and neuralgia depending upon other causes.

Although the most frequent seat of pain due to carious teeth is the temporal region, yet, as one would expect, we find it also in parts of the neck. A few weeks ago I was consulted by a lady regarding her throat. She had pain opposite the upper part of the thyroid cartilage on the right side and thought that she had inflammation at that point. Laryngoscopic examination showed the larynx to be perfectly healthy, but I found one of the molars on the same side as the painful spot to be extensively diseased. The pain from which she suffered, I have little

*F. Neucourt "Arch. Gén.," Juin, 1849.

† Richter Schmidt's "Jahrbücher."

‡ F. Neucourt "Arch. Gén.," Oct. to Dec., 1853 ; Jan., 1854.

doubt, was caused by the decayed tooth : but, as she refused to have t extracted or stopped, I could not absolutely verify my diagnosis. I put her upon a course of tonics and the pain almost completely disappeared.

This would be said by some to prove my diagnosis to be wrong : for, if the pain depended on the presence of a carious tooth, how could it disappear while the tooth remained unattended to? But we must always remember that the actions which take place in the animal body are not so simple as those which occur in the test tube of a chemist. Yet, even in the test tube we require more than one reagent to produce a reaction ; and if one of the substances or conditions necessary for the reaction be absent, it does not occur, even though other conditions be present. In the same way we know that a decayed tooth does not always cause toothache, and that toothache, when present, may frequently be removed by the use of a saline purgative. The tooth still remains as a source of irritation, but the state of the nervous system has been so altered by the purgative that pain is no longer produced by the irritation. In the same way we may not unfrequently relieve the neuralgia, originating from decayed teeth, by a judicious course of aperients and tonics. This is so far advantageous to the patient, as it relieves him from pain ; but it is, on the other hand, disadvantageous, inasmuch as it causes the medical man to overlook the real source of the evil, and allows the dental caries to proceed, instead of having it arrested by suitable stopping. In the case I have just mentioned, the pain in the larynx, which I attributed to the decayed tooth, did not lead to any change in the nutrition or functions of the larynx. Pointis,* however, records a case in which, after severe toothache, the patient suddenly lost his voice, and the aphonia was followed by anorexia, cough, wasting and feverishness, which led to the belief that he was suffering from laryngeal phthisis. But the lungs were sound and there was no tenderness over the larynx. There was slight inflammation of the pharynx and all the molars on the left under jaw were decayed, and the gums and periosteum around them were swelled. The teeth were removed, the gums cauterized and gargles employed. On the very day the teeth were extracted, the suffocative spasms which had troubled the patient abated, and on the following days the other symptoms quickly disappeared.

The irritation caused to the larynx by the process of dentition is well recognized, and has led to the employment of the term teething-cough. The existence of a real causal connection between cough and teething

* Pointis, "Journ. des Com. Méd. Prat.," Sept., 1846.

has been doubted, but there are cases on record which seem to show that this really does exist. One very marked instance of this sort has been recorded by Paasch.* A child, four months old, had a paroxysmal laryngeal cough, during which it was nearly suffocated, opening its mouth and throwing the head back. Narcotics were of no use. The gum of the lower jaw was swelled, and vesicular swellings appeared at the part of the gums corresponding to the middle incisors. These increased in size, and became dark, livid, translucent and fluctuating. During their growth the cough increased, but when the right incisor came through the gum, and one vesicular swelling broke, the cough ceased. After twenty-four hours it again began, though less violent than before. After some days the second incisor came through, the second vesicle burst, the cough at once began to disappear, and at the end of two days had entirely and forever gone.

From the close connection that exists between the throat and the ear we would expect deafness to be not unfrequently the consequence of dental irritation. It seems, however, not to be very frequent, although it does exist, as shown by the following case, recorded by Koecker.† A man, aged forty-eight, suffered from suddenly increasing deafness, but after his teeth, which were carious, and had caused suppuration of the gums, were extracted, he completely regained his hearing.

The eye is much more frequently affected than the ear, and blindness is by no means an uncommon result of dental decay. Mr. Jonathan Hutchinson has recorded some cases of this, and he regards the blindness as reflex, and analogous in its causation to essential paralysis of children. The sight is suddenly lost, but there are no cerebral symptoms. The optic nerve is sometimes atrophied, but sometimes not. The blindness is generally preceded for a long time by facial neuralgia, associated with toothache. A more striking case than any of Mr. Hutchinson's is recorded by Dr. De Witt.‡ A perfectly healthy man, aged thirty-one, suddenly noticed, in attempting to fire off a gun, that his right eye was completely blind. He had neither pain nor subjective appearances of light in the eye. He was able to distinguish light from darkness with it, but nothing more. No cause for this blindness could be discovered until twelve years afterwards, when it was found that the patient had several teeth stopped two months before his blindness. For a long time afterwards he suffered from pain and tenderness in the first

* Paasch, "Journ. of Kinderkr," 3, 4, 1856.

† Koecker, "Med. Chir. Rev.," Jan., 1843.

‡ De Witt, "American Journ., N. S.," cx., p. 382, April, 1868.

molar of the right side. The gums swelled and ulcerated, and frequent abscesses formed, which he opened with his knife. The stopping was at length removed from the tooth, and this at once relieved the irritation of the gums and increased the power of sight. In three weeks, however, when the sight had already become considerably better, the gums again ulcerated and the sight became immediately worse. The decayed tooth was then extracted and the sight became permanently improved, although it never became quite so good as that of the other eye.

The connection between the teeth and the sight has been long popularly recognized in the name of "eye-teeth" given to the canines, and this seems to depend on no popular superstition, but on a real scientific fact. It is believed by many that the extraction or decay of a canine leads to loss of sight, or inflammation in the corresponding eye, and the physiological experiments of Magendie and Schiff substantiate this belief.

Magendie divided the inferior maxillary branch of the fifth, and Schiff divided the lingual and inferior dental branches, without injury to the ophthalmic branches.* The dimness of vision produced by these experi-

* Magendie, in 1838, showed, in one of his lectures, a small dog, in which he had divided the inferior maxillary branch of the fifth nerve some time previously. "Hitherto," he said, "only those parts were affected to which the branch was distributed, but in the present instance disturbances of the visual power had appeared some days ago. There was no such opacity as that which follows section of the fifth pair of nerves in the skull, but only a little cloudiness between the lamellæ of the cornea. Their transparency was not completely lost, but there was a condition intermediate between complete transparency and commencing opacity. It appeared to him, also, that the sensibility of the eyes was somewhat altered. When engaged in another research, I have divided, in a number of dogs, sometimes the lingual branch alone, and sometimes the inferior dental branch, high up at the point where it branches off from the inferior maxillary nerve. Since here the nerve was exposed and divided outside the skull, neither injury nor compression of the ophthalmic branch is to be thought of. No doubt, by my method of operation, traction was exerted on the inferior maxillary branch, which was seized by the forceps, but the traction was exerted rather against the periphery than the centre, the dental branch being partly drawn out of its canal in the lower jaw. In most of the animals operated on nothing remarkable was to be seen, but in about a third of them (four out of eleven) an affection of the corresponding eye appeared from four to eight days after the operation, without my being able to discover any reason for this peculiarity in the way in which the operation had been performed. The conjunction became injected, and the injection went on increasing for two or three days, but never became so great as it does after division of the trigeminal. The eye was moist and covered with a thin layer of the same mucus which is secreted so abundantly after paralysis of the ophthalmic nerve. The cornea did not become opaque, but exhibited a partial grayish dimness, which extended from the centre in irregular form, to a varying extent, sometimes towards the upper and

ments is referred by Schiff to disturbance of the vaso-motor supply to the eye, consequent upon a partial paralysis of the ophthalmic branch of the fifth; but as this nerve itself was not injured in the experiment, it is evident that the vascular alterations are of reflex origin, the irritation

sometimes towards the under edge. The eye exhibited no perceptible diminution of sensibility; the pupil remained perfectly mobile and exhibited all the usual synergic contractions on movement of the eyeball.

“The dimness of the cornea increased for a short time, and in about twelve days from its commencement it disappeared completely, leaving the eye perfectly normal. During all this time the animals were perfectly lively and their general condition underwent no change.

“On what do these peculiar phenomena depend? Certainly on the weakening of the vaso-motor nerves in the district supplied by the ophthalmic nerve. But as this nerve itself was not touched, some pathological process must needs have been propagated from the wound of the third branch towards the centre, and there have extended over the original district of that branch. This very general conclusion appears to me well grounded, for I cannot believe that in these cases the hyperæmia of the eye on the side operated upon was due to chance, for this affection of the eye never occurred in any one of the numerous dogs which I kept under observation after other operations. The ophthalmic nerve here was not paralyzed, for the phenomena were not very intense, and the sensitiveness of the eye had not suffered.

“The explanation of this was all the more obscure, as I had previously convinced myself that no pathological changes could be discovered by the microscope in the central end of the divided nerve. Besides, I had performed the same operation on the third branch of the trigemus in a great number of cats and no affection of the eye occurred in them. I therefore utilized the opportunity of studying more carefully the anatomical changes which are associated with this transitory condition, which was afforded me in 1852 by two young dogs, which exhibited this dimness of the cornea after resection of the inferior dental nerve. The dogs were killed from six to ten days after resection of the nerve. The swelling and alteration of the divided end of the nerve were no greater than is usually the case after such resections. There was, as usual, an exudation of nucleated globules between the nerve-bundles in the neighborhood of the wound. Neither the inferior maxillary, higher up, nor the ophthalmic, exhibited anything abnormal under the microscope. A slight redness of the coverings of the nerve immediately below the exit of the third branch from the cranium could only be regarded as accidental and perhaps due to the traction on the nerve trunk during the operation—and all the more as this redness was greater in the animal killed on the sixth day after the resection, and in which the dimness of the eye was less than in the dog killed on the tenth day. In both animals, it appeared to me that within the cranium the arachnoid covering the pons on the operated side, as well as the pons itself at the root of the fifth nerve, were more injected than on the corresponding parts of the other side. But any one who knows how inconstant and variable is the amount of blood inside the cranium, will excuse me when I state this with considerable reserve. Both animals were killed with strychnine.”—Schiff, “Untersuchungen zur Physiologie des Nervensystems mit Berücksichtigung der Pathologie.”

having been conveyed from the site of the wound to the nerve centres, and having there exerted such an influence upon them as to induce vascular changes in the eye.

The eyelid may also be affected reflexly from the teeth. Sometimes dental irritation may cause motor spasms, and at other times paralysis. A year or two ago I had the stump of a bicuspid tooth extracted from the right upper jaw. Almost immediately after the extraction I noticed a constant spasmodic twitching in the right eyelid, which I was utterly unable to restrain. This lasted all the time the wound in the gum caused by the extraction of the stump was open, but it ceased as soon as the gum had healed and has never since returned. A case is recorded by Gaine* in which a carious tooth of the upper jaw had caused an abscess in the antrum. The right upper lid was paralyzed, the pupil dilated, and there was no reaction. The optic nerve was pale and the eye blind. On extraction of the tooth and puncture of the antrum the paralysis of the lid disappeared, although the eye did not regain sight.

Spasmodic contraction of the masseters is another consequence of dental irritation. A few weeks ago a gentleman, over forty years of age, called upon me, and told me that he was much concerned about a spasmodic affection of the jaw from which he was suffering. He was, in fact, afraid of lock-jaw. He felt obliged to keep his mouth open, because it seemed to him that if he once shut it he would not be able to open it again. I did not recollect having read any description of this affection, but it seemed evident that it must depend either upon congestion of the cerebral centre for the movement of the jaw, which Ferrier locates at the lower end of the fissure of Rolando, or on reflex irritation from the mouth itself. The latter seemed to be much the more probable, and on looking into his mouth I saw that the teeth did not seem to be altogether in good order. I accordingly requested him to see a dentist, and on inspection the source of irritation was discovered to be a wisdom tooth, which was just making its way through the gum, but in a somewhat oblique direction, so that its crown was pressed against that of the molar in front of it. On looking up the literature of the subject, I discovered that this affection was pretty fully described by Germain,† who recognized two causes for this form of trismus. The first is when the back molar is decayed and a gumboil forms at its base, and the other is when the attachment of the masseter extends in front of the angle of the

* Gaine, "Brit. Med. Journ.," Dec. 30th, 1865.

† Germain, "Gaz. Hebd.," 1863, x. 7.

lower jaw, and the wisdom tooth, in appearing, must break through its muscular and fibrous attachment. Colin states that every year he sees at least one perfectly healthy individual become suddenly affected with spasmodyc contraction of the masseters. There is no fever, but the contraction is so strong that only fluid nourishment can be taken. The contraction can be felt by running the finger over the masseter muscle. It gradually disappears in about eight or fourteen days. Little treatment is required, except attention to the bowels, and possibly, if the contraction be very severe, an injection of atropia into the muscular substance itself might be of service.

We have already noticed paralysis of the eyelid as a consequence of dental irritation, and we have also discussed the pathology of temporal and occipital headache in relation to caries of the teeth. Sometimes, however, paralysis occurs of a much more extensive character, in consequence of dental irritation, especially in children. Teething is recognized by Romberg and Henoch* as a frequent cause of paralysis appearing in children without any apparent cause. According to Fliess,† paralysis of this sort occurs more commonly during the period of second dentition, whereas convulsions generally occur during the first. Its onset is sudden. The child is apparently in good health, but at night it sleeps restlessly and is a little feverish. Next morning the arm, or more rarely the leg, is paralyzed. The arm drops ; it is warm but swollen, and of a reddish blue color. It is quite immovable, but the child suffers little or no pain. Not unfrequently paralysis is preceded by choreic movements. Sometimes recovery is rapid, but at other times the limb atrophies, and the paralysis may become associated with symptoms indicating more extensive disturbance of the spinal cord and brain, such as difficulty of breathing, asthma, palpitation, distortion of the face and squint, ending in coma and death.

It is only in very rare instances that we are able to gain any insight into the pathological anatomy of such cases, because they rarely prove fatal, and even when they do so, the secondary changes are generally so considerable as to leave one in doubt as to the exact mode of commencement. This renders all the more valuable the case recorded by Fliess,‡ in which a boy five years old, and apparently quite healthy, found his left arm completely paralyzed on awaking one morning after a restless

* Colin, "Études Cliniques de Médecine Militaire."

† "Klinische Wahrnehmungen und Beobachtungen."

‡ Fliess, "Journ. der Kinderkr.," 1849, July and August.

night. The arm was red, but the boy suffered no pain, and played about without paying much attention to the arm. The same day he fell from a wagon upon his head and died in a few hours. Apart from the fracture of the skull, which caused his death, the anatomical appearances which were found, were congestion of the spinal cord near the point of origin of the brachial nerves; the meninges were here much reddened and congested; the veins were much fuller than on the corresponding right side. There was no organic change perceptible, either in the spinal cord or in the brachial nerves. On the other hand, the turgescence of the veins extended from the shoulder and neck up to the face, and was very striking in the sub-maxillary region.

This vascular congestion seems to point to vaso-motor disturbance of a somewhat similar kind to that which we have already noticed in connection with occipital headache, or with migraine accompanied by subjective appearances of either form or color. Chronic movements, as we have said, have been noticed as prodromata of paralysis, and occasionally dental irritation may give rise to chorea alone. This irritation may depend, according to Levick,* either upon the second dentition, or upon dental caries, and the causal connection between the two is shown by the fact of it disappearing when the tooth pierces the gum, or when the carious teeth are extracted.

According to Russell Reynolds,† the second dentition is also a cause of epilepsy, and he has observed that those who are affected by it have often suffered from convulsions during the first dentition. A case is recorded by Albrecht ‡ of a boy, aged twelve, who suffered daily for twelve months from general convulsions, which began in the temporal region and extended to the external auditory meatus. There was no decay in this instance, but the teeth were large, and the last molar on the right side had its crown jammed into the ascending ramus of the jaw. As soon as it was extracted the pain ceased, and the convulsions did not return. Another case is given by Mr. Castle § of a young man, aged nineteen, who had complained for four years of headache and pain in the eyes, stiff neck, swelling and numbness of the right arm. For the latter two years he suffered from general convulsions, which came on every two or three days, ending in vomiting, and often succeeded by partial deaf-

* Levick, "Amer. Journ. of Med. Sciences," Jan., 1862, p. 40.

† Russell Reynolds' "Lancet," July, 1848.

‡ Albrecht, Casper's "Wochenschr," 1837.

§ Castle, "Lancet," Jan., 1848.

ness. All treatment was useless, and setons and blisters to the neck did no good. Nearly all the teeth were decayed ; nine were extracted, and almost all of them had matter at their roots. A gargle was given, with five grains of iodide of mercury twice a day, and a purgative twice a week. After the extraction of the teeth the fits entirely disappeared.

Affections of the intestinal track depending on dental irritation are of very considerable importance indeed. The diarrhoea which comes on in children during dentition is well known, and is probably of a reflex character.

In adults many a case of dyspepsia is due to defective teeth, partly, it may be, from reflex affection of the nerves, both secretory and motor, of the stomach and intestines, but partly also, without doubt, from the imperfect mastication of the food, which is swallowed without being broken up on account of the pain or inconvenience which the act of mastication causes. In this way two evils are occasioned. First of all, the shortened sojourn of the food in the mouth allows no time for the secretion of saliva. From want of this the starchy constituents of the food are imperfectly digested ; and, moreover, deficiency of saliva also lessens the normal stimulus to the secretion of the gastric juice ; for alkaline fluids, like saliva, stimulate the secretion from the stomach, and this deficiency of saliva is accordingly followed by a deficiency of the gastric juice. But, secondly, imperfect mastication has a mechanical action in preventing perfect digestion, for the food, being swallowed in lumps, is not permeated by the digestive fluids, and thus cannot be dissolved in anything like the same period of time that it would otherwise be. The diarrhoea which occurs in children is probably produced through the gastric and intestinal branches of the vagus, and other branches of this nerve may be affected reflexly from the teeth. In a case recorded by Lederer,* the second left upper incisor was replaced in a young girl by an artificial tooth. Shortly afterwards she became ill, vomited everything, and suffered from convulsions. No remedy succeeded until the tooth was removed and shortened. Immediately all the symptoms from which she had suffered disappeared.

The close connection between the roots of the fifth nerve, and those of the vagus, can be demonstrated anatomically, and it is probably in consequence of this that irritation of the fifth is able to exert such a powerful influence upon the circulation. Some time ago, in a paper which I published in the *British Medical Journal*, I mentioned that the cause

* Lederer, "Wein. Med. Presse," vii. 24, 1866.

of death during the extraction of teeth under chloroform, was probably the stoppage of the heart's action through the inhibitory fibres of the vagus, associated with a reflex depression of tone in the blood vessels. The reason why the extraction of a tooth in a person who is not under the influence of an anæsthetic is followed by no ill effects, is probably this: that in him the irritation of the fifth nerve produces two distinct actions which counterbalance each other. It may cause reflex stoppage of the heart through the vagus, but at the same time it causes reflex contraction of the vessels through the vaso-motor centre. This contraction of the vessels maintains the pressure in the arterial system during the stoppage of the heart and thus no harm whatever is done. When an anæsthetic is used, however, one of these pieces of nervous mechanism may be paralyzed by it, while the other is not, and thus the extraction of the tooth may stop the heart without causing contraction of the vessels. The blood-pressure will then sink very rapidly in the arterial system, and fatal syncope may be produced. If, however, the anæsthetic be pushed to a greater extent, so that both parts of the nervous mechanism just mentioned are paralyzed, the vessels are not contracted; but neither is the heart stopped. The operation is, therefore, comparatively free from danger when no anæsthetic has been given, or when the anæsthesia is perfectly complete, the period of danger being that of imperfect anæsthesia.

We have now seen how affections of sensation, of motion, and of nutrition may all be dependent upon dental irritation, but even the cerebral faculties themselves may also suffer from a similar cause. One or two very interesting cases of this sort are recorded by Dr. Savage in the *Practitioner* for June, 1876. The first of these was that of a farmer, aged twenty-two, with a strong family tendency to insanity. In May, 1875, he suddenly took to riding madly about the country without his coat and waistcoat. From May until November he was exceedingly noisy, destructive, untidy, almost constantly excited, and if for a day or two he was exhausted, he was sullen and more dangerous. In the middle of November he complained of very severe toothache that caused him to be sleepless. He bore this for two or three days, after which the stump was removed. There was suppuration at the root of the fang. From the time that the stump was extracted the patient steadily improved, and by the middle of December was quite well. Another case was that of a woman, aged thirty-four, who had a brother insane and had herself been intemperate. She was admitted in September, 1875, suffering from acute mania. She was noisy, violent and obscene. She con-

tinued to be so until January 20th, 1876, when she complained of great pain, with swelling and redness of her right lower maxilla. She had some bad teeth, but did not complain of toothache. The pain and swelling increased, and at the same time she became quiet and reasonable. She said she could not remember much of her state of excitement. The swelling of her face subsided and she remained quite well. This case, however, was not so convincing as the first one recorded, because here there was a second possible cause of recovery, as she was pregnant, and said she felt quickening about ten days before her recovery. The recovery, however, was coincident with the pain and swelling of the face, and seemed, rather than the quickening, to be the cause of recovery.

(*The Discussion will be given in next issue.*)

A DENTIST'S LIBEL SUIT.

THE JUDGMENT IN FAVOR OF D. APPLETON & CO. AFFIRMED.

The late Secretary of State, William H. Seward, was attended by Dr. Thomas B. Gunning, a surgical dentist, at the time his jaw was broken by an assassin. An article published several months ago in the *New York Medical Journal* contained the following paragraph :

“ The late William H. Seward, when traveling around the world, and when at Yokohama, Japan, required the services of a dentist. Upon examination it was found that the inferior maxilla was comparatively useless for masticating purposes, there being a false joint at the seat of the original fracture, no union having taken place. This case will be remembered from the world-wide notoriety of the circumstances attending the injury, as well as the reports, which have been universally believed, that the patient was benefited by the treatment he received for the cure of his fracture.”

Deeming that this paragraph contained a covert attack upon him, Dr. Gunning brought a suit to recover damages for libel against Messrs. D. Appleton & Co., the publishers of the *Medical Journal*. The action was brought in the Court of Common Pleas, where judgment was given, on a demurrer, in favor of the defendants. The plaintiff appealed to the General Term, which body yesterday handed down a decision affirming the judgment of the lower court. The opinion of the General Term—written by Judge Laramore—declares that the language of the *Medical Journal* is not defamatory on its face ; that the plaintiff is not referred to

in the publication, either personally or as one of a class ; that no malice is presumable from the language, and that no right of action has accrued to the plaintiff. Chief-Judge Charles P. Daly and Judge Joseph F. Daly concur in these conclusions.

PORCELAIN PLUG IN A CAVITY.

MR. EDITOR: As I had occasion, only a short time ago, to invent the following operation, I thought perhaps it would be of advantage to some members of the profession to know the particulars of the case.

Last January a lady came to me with a large cavity on the "labial" surface of the right superior "central incisor," and objected very much to having a gold filling on account of its position, but wished me to put in something that would preserve the tooth and be permanent and not be any more obtrusive than possible.

I pursued the following plan : In the first place, I cleansed the tooth thoroughly so as to be sure of its color. I then selected a "porcelain" tooth to match it as near as possible, and proceeded to excavate the cavity. I made it as deep as possible without infringing on the "nerve canal" too much. The shape of the cavity, when excavated, was nearly square, with an undercut all around. I then ground the back off the "porcelain tooth" till its thickness was a trifle less than the depth of the cavity, and then the edges so as to fit the cavity very nicely, with the edges slightly beveled toward the outside of the cavity. Having filled the cavity about half full of "agate cement," mixed quite thin, I inserted my "porcelain plug" and pressed it to its place. I kept it dry until the cement was sufficiently hard to trim off, and, when all finished, I had a very nice looking piece of work, and I do not see why it will not be permanent.

Respectfully yours,

F. H. GREENE.

NOTES.

The Use of the Audiphone and Dentaphone.

In a lecture published in the March issue of the *College and Clinical Record*, Dr. Laurence Turnbull describes the construction and *modus operandi* of the audi-

phone and dentaphone. The watch dentaphone is made like a small hand telephone or "lover's telegraph." It has a mouth-piece, to which one end of a string is attached ; the other end of the string should be held between the teeth

of the person spoken to; the person speaking speaks into the mouth-piece; the sound is transmitted by the string to the teeth, and from the teeth through the facial and temporal bones to the auditory nerve. The principle upon which the audiphone acts is the same. It differs in its construction, in that the receiver or mouth-piece is larger, convex, and resembles somewhat a fan. The application of the principle in both depends upon the power of certain bodies to convey sounds by being put into vibration by the human voice. When the auditory nerve is intact, the deafness must necessarily be due to disease of the middle ear or obstruction of the auditory canal. These cases can hear with the audiphone or dentaphone, but in disease of the auditory nerve they will be of no service. The best method of determining whether or not the case is likely to be benefited by their use is to put a loud-ticking watch between the teeth and then over the auricle. If its ticking is heard louder when it is between the teeth, the case is likely to be benefited, as it shows that the auditory canal, and not the nerve, is the seat of the disease.

New Jersey State Dental Society.

The Tenth Annual Session of the New Jersey State Dental Society will be held at Long Branch, July 20th, 21st and 22d. The Board of Examiners will meet on the 19th for the examination of candidates for license to practice.

The profession generally are invited to be present. Long Branch being easy of access, with unsurpassed hotel accommodations, every attention will be given inventors and dealers in dental appliances for the proper exhibition of their goods. Those so desiring will communicate with Dr. J. C. Clarke, Chairman Executive Committee, Jersey City.

CHAS. A. MEEKER, *Sec'y,*
Newark.

Ammoniacal Sulphate of Copper in Neuralgia.

The value of ammoniacal sulphate of copper in the treatment of neuralgia has been asserted by M. Féréol in a communication to the Académie de Médecine. He states that in cases in which every treatment has failed, even the administration of gelseminum and of aconitia, a cure or remarkable relief may be obtained to the most severe symptoms by this drug. Among the examples given of its use was the following: Trifacial neuralgia of two months' duration, with complete insomnia, was unrelieved by the extraction of teeth, quinine, bromide, aconitia, or tincture of gelseminum, hypodermic injections of morphia, or arsenic. From the first day of the administration of the ammonia sulphate of copper there was a notable remission in the symptoms and cessation of the insomnia. In one case the dose was pushed to eight grains without any other accident than nausea.

THE SEMI-ANNUAL MEETING OF THE Connecticut Valley Dental Society

for 1880 will be held at the SEA VIEW HOUSE, Savin Rock, West Haven, Conn., on Thursday and Friday, June 17th and 18th. The meeting will open Thursday at eleven A. M.

The Executive Committee, in their selection of this beautiful place on the Sound, feel that it is much more central and eligible than some that were suggested to them. It is certainly a spot where both pleasure and profit may be obtained at this time by every dentist who can attend. It is distant from New Haven but $3\frac{1}{2}$ miles; accessible by horse cars and boat. The hotel accommodations are ample and excellent, and the rates will be reduced, to dentists and manufacturers, to \$2.00 per day. The horse cars leave the R. R. Depot at New Haven every fifteen minutes for Savin Rock, passing the entrance to the Sea View House. Let every dentist, whether in membership or not, be present. All manufacturers and dealers are also invited to be present.

Chicopee, Mass., May 10th, 1880.

A. M. ROSS, *Secretary.*

JOHNSTONS'

Dental Miscellany.

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FALLIBILITIES OF SCIENTIFIC EVIDENCE, ETC.,
IN MEDICAL JURISPRUDENCE, ETC.

PART III.

BY A. C. CASTLE, M.D., NEW YORK.

Often, while writing these pages, we have felt inclined to put them aside, with the apprehension that our efforts might be construed into some personal hypercriticism of distinguished scientists or established authority. Any such intention, however, is far, very far from our thought. We are influenced solely by the purpose of impressing upon the minds of the right-thinking community the fallibility of scientific evidence as almost constantly presented in our courts of law and "justice," and of showing the welding and riveting under the forms of law of incongruous facts and fancies, reasonings and sophistry, logic and philosophy, incompatibilities and overreaching technicalities, into a comprehensive maze of guilt or innocence, as the chance of the hour—good or bad fortune—may affect the efforts of the champions of science in behalf of whose side or cause they have entered the lists.

Inexact experimental chemistry is sufficiently unreliable in criminal jurisprudence, without the aid of the fearful inaccuracies attending the amazing discoveries by means of the all-marvellous microscope, to offer new hypotheses of the imagination. We in no manner underrate the importance and the usefulness of the microscope, nor deny its powers in

disclosing wonders which we could not see by the unaided eye. Yet we are free to protest against hanging a human being upon the testimony of an over-zealous microscopist, or of an imperfectly constructed microscope.

Next in importance to chemically prepared pure tests in analytical investigation for ascertaining the presence of suspected poison in the human body, is the science of micography, when used as an adjunct in medical jurisprudence. It is needless to say that an exact microscope for this purpose is a *sine qua non*, and that the object investigated should be subjected to examination by several microscopes, and these in the hands of several persons. Several forms of this instrument should be used—the single, the compound refracting and compound reflecting, etc., etc. The same circumspection should apply to the micrometer, which should be tested upon each microscope used, with the view, if such be possible, of obtaining *the positive* and not an *apparent* measurement of corpuscles, etc.

The obtaining of the highest and lowest number of arsenical crystals, and the highest and lowest mensuration of blood corpuscles, and adding them together, and then averaging by dividing the sums by two, afford but an indifferent knowledge of their true number or magnitude.

Admitting all the qualities claimed for microscopes, the vital element, after all, is the physical excellence of the vision of the expert using them. The sight of an expert, in all its natural freshness and power, is dependent upon his general constitutional vigor of health, that he be entirely free from functional derangement, such as dyspepsia, bilious and "nervous" temperament, etc. "Color-blindness," the widespread organic imperfection observable in students, shows the absolute necessity of first testing the visual condition of the expert before accepting his testimony in criminal jurisprudence.

We are not disposed to be captious concerning the microscope, or with the exaggerated narrations we read and of which we hear. While they serve to please the multitude and do no harm to any one, there can be no more valid excuse for spoiling the fables than there is necessity for disturbing the absurd story about Christopher Columbus having flattened the apex of an egg and stood it on end as solving a mathematical problem.

We would not disturb *Leuvenhœk's* statement, if we could, that with the microscope he has seen animated insects of which *twenty-seven millions* would only equal one *mite*. Another equally eminent authority tells us that the mite makes five hundred steps per second. Another informs us

that insects are observed in the cavities of one grain of sand. Another, that mould is a forest of beautiful trees, with their variety of branches, leaves, flowers, fruits and parasites fully discernible. * * Another, that the surface of our bodies is covered with scales—like those of a fish—that a single grain of sand would cover one hundred and fifty of these scales, and that a single scale covers five hundred pores of the skin, yet, through these narrow openings, the sweat exudes like water through a sieve. Each leaf has a colony of insects grazing (!) on it like cattle in the meadows. Nor would we disturb the legends of the student's experimental philosophy about the *Argro Romano*, and of his cultivating a plantation of microscopic vegetation in the "field" of his microscope, consisting of numerous movable shining spores, with which dogs were inoculated, the result being the production of well-defined intermittent fever, in the paroxysms of which the temperature of the dog's blood rose from 30° to 42° Centigrades. A microscopic expert did better than this, in the case against the Rev. Mr. Hayden. He asserted that in the "field" of his microscope a stone was covered with human blood corpuscles, which, by some miraculous evolution, when seen in the field of another microscope, were metamorphosed into a red vegetation named *algæ*. And still we recall another wonderful discovery in the field of the microscope, that acids have no decomposing effect upon the teeth—the cause of teeth decaying is *bacteria*, "produced from the infusoria of ferment." Our best (!) microscopes are not sufficiently powerful to bring into view many of the smaller bacteria of the mouth—so says the Oracle. We were more delighted than convinced when Dr. Dyonisius Lardner microscopically, hydro-oxygenally demonstrated, before us, the circulation of the blood in a mosquito. We were the more impressed with this demonstration because we remembered that this distinguished doctor, in a lecture delivered in England, demonstrated to his satisfaction the impracticability of navigating a ship across the Atlantic Ocean by steam machinery, and that the steamship *Sirius* had, during his lecture, accomplished the passage. All these sink into insignificance, compared with the blood discoveries made by a German microscopist, noticed in the *analytical and critical notings of the British and Foreign Medico-Chirurgical Review*, who makes known that he found in human blood all sorts of beasts, birds and fishes of the dimension of animalculæ. We abstain from scaring our readers with their order of classifications, with their fearful long Latin and Greek names; sufficient it is to state their character in plain English, to wit: the roaring lion, screaming tiger, screeching cat, bellowing bull, howling wolf or dog, grunting hogs, crying

hyena, snorting elephant, squeaking rat and mouse, screeching owl, soaring eagle ; the whale, shark, dolphin, black bass, etc.—tumbling, rollicking, hiding and seeking up and down through the veins—affecting the *sensorium*, and that each individual idiosyncrasy of a person partakes of the characteristics of the animal predominating in his blood circulation.

“ What is truth ? ” asked jesting Pilate ; and the question comes up in many singular ways in the experience of every-day life. No stronger example of the difficulty of ascertaining the truth from conflicting evidence has come under our notice than in the celebrated Howland will case, the eventful history of which may be found in a number of Little & Brown’s *American Law Review*.

Hetty H. Robinson was the daughter of a New Yorker, Edward Mott Robinson, and of Abby Howland, his wife. She lived with her aunt, Sylvia Ann Howland, in New Bedford, and was estranged from her father. Edward Mott Robinson died leaving nearly six millions of dollars, all of which his daughter inherited.

Sylvia Ann Howland, the aunt, was an old and feeble woman, childless, of simple habits, and living a retired life. She died some time after Hetty’s father, “ worth ” over two millions of dollars. Hetty Robinson was her chief companion in her later years, and when the old lady died a will was found, dated 1863, giving about half her estate in charity and the income of the remainder to her niece. Hereupon, Hetty Robinson produced another will, which gave her the whole estate, and asserted her claims before the court of law. Her statement was that she and the old lady, her aunt, had exchanged wills, each agreeing to bequeath to the other all her property ; that this was done before the death of Mott Robinson, at the instance of the old lady, who did not like Hetty’s father, and that it was a condition of this exchange of the wills that neither should alter the testamentary disposition without notice to the other.

Now the opponents of Hetty Robinson’s claims disputed the genuineness of *one* of the signatures in this will—that on the “ second page,” which was in fact a fly-leaf. The fact is, they charged that Sylvia Ann Howland’s signature on the two copies produced of this “ second page ” was forged. And it is here we meet with the astonishing contradictions on which we remarked above.

John E. Williams, President of the Metropolitan Bank ; Joseph E. Paine, of Brooklyn, thirty years an accountant ; George Phippen, Jr., of Boston, a bank teller ; Solomon Lincoln, Cashier and President of a

bank ; Charles A. Putnam, broker and banker, of Boston ; Wm. F. Davis, of Boston, formerly bank clerk and for twenty years a student of handwriting ; Lemuel Gulliver, a bank cashier, and others, testified that the signatures were undoubted forgeries.

George N. Comer, President of the Commercial College in Boston, an expert in handwriting, declared both the signatures to the "second page" were forgeries, and that one was done by placing paper over a genuine signature and making a tracing with a wetted lead pencil, and was afterwards written over with pen and ink, while the other was thus traced, but without a pencil. Not only this ; Mr. Comer testified that "the writing of no two persons stains the paper in the same way, or produces the same microscopical effects." James B. Congdon, Treasurer and Collector of New Bedford for thirty years, declared it impossible for any individual to write his name three times so that the resemblance may be such as appears "in three signatures under examination." Alexander C. Cary testified that one of the signatures "slipped in the tracing." George C. Smith, an engraver, declared it impossible for signatures so closely to correspond. John E. Gavitt, President of the American Bank Note Company, thought the same. George A. Sawyer, writing teacher, Boston, found the signatures "unnatural, studied, made with great effort" to make them look exactly like the authentic writing. Dr. Charles T. Jackson, chemist and State Assayer, asserted that under the microscope one of the signatures was shown to have been "written with pale ink, and covered with a very thick and black and gummy ink." Professor E. N. Horsfield declared the same signature to have been "rewritten or painted," and found indications of tracing in both the disputed signatures. Finally, Professor Benjamin Pierce, the celebrated mathematician, asserted that the chances of three signatures being as much alike as the three under examination were, mathematically considered, as two thousand six hundred and sixty-six millions of millions against one.

Here were sixteen witnesses, all experts, some chemists and microscopists of renown, and all men of high character, who united in the assertion that the signatures were forged : and some even showed how it was done, and found the traces of bungling work. But see how these sixteen experts were met. To answer the assertion that no one ever writes his name twice or thrice in succession so nearly alike, one hundred and ten old checks of President John Quincy Adams were put into the hands of Mr. Crossman, an engraver of Boston. These were carefully compared, which, with numerous signatures to letters and

checks of some dozen or more of the most eminent bankers and superintendents of important institutions, all exhibited a remarkable uniformity, and in some of them the covering appeared as remarkable as in those of the case at the bar.

Other experts, George H. Morse, engraver; T. C. Mullen, writing-master; Joseph A. Willard, Clerk of the Superior Court; C. French, Principal of the Commercial College, and John A. Lowell, engraver, all believed the signatures genuine. George Rye, draughtsman, experienced in tracing, found no evidence of tracing. George Mathiot, of the Coast Survey Office, believed no one but a practiced expert could have made a tracing which should be so well done, and held, therefore, that the signatures were genuine.

But this was not all. Sylvia Ann Howland's own signatures to bills of lading were tested, and, it is affirmed, in some instances found to match as closely as the disputed signatures. What shall we say, then, to Professor Pierce, with his mathematical calculation of probabilities?

Finally, to match or set off against Dr. Jackson and Professor Pierce, Professor Agassiz and Dr. Oliver Wendell Holmes testified that under the microscope there are no signs of tracing, and otherwise *scientifically* and *lucidly* explained away all the scientific testimony put forward by the contestants.

What is truth, in this conflict of evidence? Who shall decide when such distinguished, eminent doctors disagree? Is it wonderful that the court, puzzled, no doubt, and hopeless to come to any reasonable decision on this point, decided the case upon another and minor point, not at all connected with the authenticity of the will? Being human, a court of justice could scarcely do otherwise.

The microscope alone proved incapable of demonstrating the presence of blood in the case which occurred in Cincinnati, 1878, of the murder or suicide of Harry H. Baldwin. The description of the discovery of the murder (?) follows: The soil of the alley in which the valise, hat and pistol of Baldwin were found, was observed to be "stained in places by some red liquid." Detective White, thinking that this fact might possibly aid in the solution of the mystery "surrounding the crime," collected some of this stained soil, and it was given to Health Officer Minor and Dr. McKenzie, of Cincinnati, to be subjected to "scientific tests," in order to determine whether the stains were of blood or otherwise. The specimen was first examined through a microscope with a power magnifying four hundred diameters. *No blood corpuscles or traces of blood could be discovered.* But for the excitement which this crime occa-

sioned, and the "seemingly impenetrable mystery" which surrounded it, the examination would have ended here, "as microscope examinations have always been supposed to furnish conclusive evidence as regards blood-stains." The gentlemen, however, to whom the material was given for their examination, did not conclude their labors with the use of the microscope. The specimen was placed on the spectroscope and then subjected to powers of the solar spectrum. The "usual marking in such cases occurs between E and D of FRAUEN HOFFER's lines"—that is, between the yellow and green lines. "*The test was perfect,*" say the gentlemen. *Hæmal* globules were detected which "indicated" the presence of blood in the "suspected" fluid. In order to make a comparison, fresh blood was also examined and presented the identical markings. "*No corpuscles were found, and this fact prevented the experts deciding whether the blood was human or not.*" The absence of corpuscles is explained by the fact that the stained matter under examination was covered with snow which had been rapidly melting, and it is a well-established scientific truth, that blood corpuscles, when mixed with a large quantity of water, may be entirely dissolved, leaving no traces behind but the coloring matter.

As the nursery expert sings :

"Here we go up, up, up ;
Now we go down, down, down."

In the trial of Thomas W. Piper, in Boston, for the murder of Mabel H. Young, in the belfry of the Warren Avenue Baptist Church, Dr. Joseph B. Treadwell described finding a hair adhering to the breast inside of the prisoner's coat. It was a scalp hair, the bulb was on it and appeared fresh; afterward, in a fortnight, it was shrunken, showing that when he first saw it, it had recently been pulled from the head. "There is a difference," he continued, "in certain heads between the hair of a child and an adult." He had been to No. 50 East Chester Park, took some hair from Mabel Young and examined it under a microscope; some of it had a bulb attached. Hair can be classified. He used a microscope of 500 diameters. The hair he took from the coat was a remarkably smooth hair; it was a remarkably large hair: the color was quite light; measured at first one one-hundred-and-sixtieth of an inch in diameter; it shrank one two-hundred-and-fortieth of an inch. On the bunch of hair taken from East Chester Park, found nineteen hairs with a bulb; on three of them found an excretion, *the same as on the single hair* taken from the coat. They corresponded in lines, in smoothness, in size. Sixteen showed the *pith* of the character of the single hair.

The "average" diameter of these hairs was one two-hundred-and-sixty-fourth of an inch, the smallest was one two-hundred-and-thirty-third of an inch, the largest one two-hundred-and-forty-first; had examined hair found in a good many heads, *but* this hair was so *peculiar*, that he could identify it as belonging to the hairs taken from Mabel's head.* Hairs that fall out usually fall out with a shrunken bulb, caused by disease; could tell whether it was pulled out or had fallen out by disease.

Professors Babcock, Fitz and Wood were called by the defence to testify in regard to these hairs. Professor Fitz said he had found hairs among those which came from the head of Mabel Young varying in size one six-hundred-and-fiftieth of an inch to one two-hundred-and-eightieth of an inch—these figures being the extremes.

It is thus testified that he found none so large as the one taken from the prisoner's coat, nor so large as the "average" of those examined by Dr. Treadwell (one two-hundred-and-sixty-fourth). He also testified that in most particulars hairs taken from the head of Miss Gibson, a young lady in whose company Piper is said to have spent the evening previous to the murder, could not be distinguished from those taken from Mabel's head. Professor Babcock corroborated Professor Fitz. The largest hair he found among those of the murdered child was, one three-hundred-and-sixth of an inch, and the smallest, one seven-hundred-and-sixty-sixth of an inch in diameter. Professor Wood corroborated both these witnesses.

In the trial at Concord, N. H., of the Canadian, Laparge, for the murder of the school-girl, Josie Langmaid, Professor John Baker Edwards was sworn for the defence. He said: Am a Professor of chemical analysis and microscopic science in the Medical College, Montreal. It is impossible to testify with certainty to the difference between the blood of the different families of mammals. There are two kinds of corpuscles in mammalian animals, one white and the other red. The measurements referred to in standard authorities refer to the *red corpuscles*. These vary in various animals from $\frac{1}{2340}$ to $\frac{1}{5500}$ of an inch. It is almost impossible to restore these corpuscles of the blood to their natural size and shape even a few days after death, as the corpuscles are continually changing size and shape. There is little difference in acknowledged authorities that the difference between the blood of different mammals cannot be de-

* The cross-examination of this evidence was scientifically searching, and at its close Dr. Treadwell, in reply to the question, said: *he could not say the hair could not have come from any other head.*

terminated by microscopic analysis. There is no difficulty in distinguishing human blood in the fresh state from that of inferior animals.

Dr. Edwards was closely cross-examined. Admitted blood-science was progressive—well-ascertained experiment is better than any published. He had given his own experiments with such instruments as he deemed the best.

Dr. J. B. Treadwell, in rebuttal, reiterated that microscopic examination of blood had made such strides within the past six years that the perfect admeasurement of blood corpuscles, *when restored to their natural size by suspension in liquid similar to serum*, had been made *even years after* the blood was drawn. The measurement under the microscope of four thousand diameters is just as easy as a measurement of a box by a carpenter ! !

Professor S. Dana Hayes, of Boston, testified that he had succeeded in restoring blood corpuscles after they were dried for months and *years* to *so near the normal state* that the animal from which the blood was taken could be ascertained. He believed the science was so advanced that experts can take an indefinite number of specimens, properly prepared, and discriminate the *parent animal* of each.

The defence, in rebuttal, called Gilbert Ralph Rickwood, of the McGill University, Montreal. He testified that the blood of men, horses, sheep, cows and goats can be distinguished under the microscope, but after it has become dried the distinction is a mere matter of opinion and wholly untrustworthy as evidence. Under cross-examination he said his experiments were based upon the advancement of blood-science in Canadian schools. It might be better in Germany, where it originated, and wherever mechanical advantages can be obtained.

The defence rested here, and Drs. Chase and Hailes were recalled to show that the mechanical, spectroscopic, microscopic and scientific advantages of Boston are *beyond* criticism.

In the County Special Sessions, recently, Col. Hastings and Dr. White prosecuted five delinquents for retailing adulterated milk. *They* were fined. The same gentlemen also prosecuted a *wholesale* dealer in milk, whom they claimed had adulterated the milk sixteen per cent., showing that the lactometer exhibited four per cent. adulteration, and chemical analysis showed further adulteration. The judges refused to inflict a fine, and declined to accept the lactometer test in this case, because, they said, that instrument had been shown by chemical analysis to be untrustworthy. How about the retailers? But a short time ago a curious crusade arose among the citizens of this municipality, led on

the one side by Drs. Chandler, Percy, and others, against fraud in relation to "swill-milk" from swill fed and diseased cows, and *adulterated* milk from healthy cows; the vicious properties of the milk largely increasing sickness, more especially in children, and causing the death of many. This fact was as patent as the light of the sun. There is not a farm-house drudge, never so dull, nor a farm hand, however obtuse in perception, but can at once recognize the good or bad quality of milk. The impurity and deterioration of city milk serves as one of the sources of his amusement when visiting the city, and seeing people gulled with, and drinking, "such stuff."

When Dr. Chandler and others proclaimed the fraud and the Board of Health brought its legal power to suppress the cruel and wicked imposition, as in duty bound to do, expert science, like an evil spirit, springs up in antagonism, and attempts to prove Dr. Chandler, the Board of Health and medical men all wrong.

The value of pure milk, however, cannot be underrated. The *chyle* secreted under the name of milk forms the nutriment for the young. What is chyle? The nutritive portion of food taken into the stomach to supply the matter from which the blood and other fluids of our body are prepared, from which fluids the solid parts are formed. By its acescent nature it sometimes restrains the putrescent tendency of the blood, hence the dreadful putridity of the humors from the starving. Milk is an excellent remedy against scurvy and in scrofulous habits of body. By its very copious aqueous latex it prevents the thickening of the fluids, and thus renders them fit for the various secretions, forming the most excellent nutriment of all aliments for new-born young.

We glean from the case of Schoeppe the most remarkable instance of the fallibility of scientific evidence, as thoroughly dissected and analyzed by the *New York Tribune* at the time of the trial. Here was a man who, according to the verdict of one jury, should have been hanged and put away long previous, had not "good luck" secured him a second trial, by which he is found to be innocent upon testimony perfectly satisfactory to judge, jury, bar and the public. The scientific evidence, which upon the first hearing was thought to be sufficient to consign the accused to the gallows, is found upon the subsequent trial to be *simply good for nothing*. Professor Aiken was the expert upon whom the government relied at the first trial to prove the poisoning. This gentleman has the highest reputation as a chemist, and was frequently called upon to testify in cases of poisoning. At the time of the first trial he had no doubt whatever that Miss Steinecke was feloniously killed by prussic acid,

the presence of which in the stomach of the deceased he emphatically asserted. Miss Steinecke's family, it appears, never for a moment supposed that she had died other than a natural death until the examination of her will revealed the irritating fact that she had left her money to Dr. Schoeppe. Then they were at once convinced that she had been poisoned, and, moreover, that she had been poisoned by the doctor. The Professor was called in to conduct a *post mortem*; he was requested to look for poison, and he found what he looked for. Upon this testimony Dr. Schoeppe was convicted, and it was only by accident that he was not at once put to death, in accordance with law.

Upon the second trial, which nothing but the most unceasing importunity of his friends secured him, comes Professor Genth, of the University of Pennsylvania, and swears positively that Dr. Aiken's testimony proved nothing whatever; that the analysis *did not* disclose the presence of prussic acid in the stomach, and that the *reagents employed* by Dr. Aiken ~~WOULD OF THEMSELVES CREATE THE POISON SAID TO HAVE BEEN FOUND~~. The testimony of Professor Genth was so clear and positive, that the State prosecutor did not venture upon a cross-examination at all. It was evident after this that the State had no case, and those who represented the State—to their honor be it recorded—were the *first* to acknowledge the truth. This case, in the annals of criminal jurisprudence, takes position in positive demonstration parallel with that of Madame Lafarge. The great lesson they teach us is, the untrustworthiness of what is usually dignified with the title of scientific evidence. At best, it is only opinion, and can have no more weight than the *status*, character, reputation and professional standing, of the witness, may impart to it. Where it happens (and where, now, does it not happen?) that two scientific experts positively contradict each other, and oftentimes contradict themselves, can anything be more criminally absurd than to call upon a jury to decide between them? Who shall decide when doctors disagree? Will the tradition of ages, or the “philosophy” of law, or the wisdom of ancient usage enable twelve men—“in a box”—to decide the question—men who are ignorant of poisons, who know nothing of chemistry, whose brains have been muddled with abstruse sophistries of technicalities, and have no acquaintance whatever with the relative professional capacities of the contradicting witnesses?

In the case of the Rev. Mr. Vosburgh, tried in Jersey, charged with attempting to poison his wife—a charge evidently produced by a family quarrel—we find the evidence of the expert resting upon a bottle, partially filled with fluid, that had been clandestinely passed through a hole

to the outside of the fence, at the back of the yard attached to the gentleman's residence. This bottle was, afterwards, secretly taken away to be examined.

The bottle had not been carefully sealed, signed and conveyed to an expert in legal form, by coroner's (or other's) orders, as poisoned tissues of the body, stomach, etc., usually are. In this case everything of this kind of usage appeared to be avoided. The reverend gentleman was acquitted.

Had Dr. Schoeppe, and the Rev. H. H. Hayden and the Rev. Mr. Vosburgh been friendless, as so many men charged with the crime of murder are, and had they been tried previous to the present custom of employing experts for the defence, or had they been tried in States whose laws are summary, the foulest wrong that could be inflicted upon human beings would have been their fate.

The latest exhibition of scientific evidence illustrative of its fallibility in criminal jurisprudence, was in the trial of the Rev. H. H. Hayden, for the murder of Mary Stannard. This murder presents nothing conspicuous above the ordinary character of such crimes that should place it among "celebrated cases," excepting the peculiar, extraordinary and even extra-official exertion of the authorities from the moment of discovering the murdered body—the "jumping at a conclusion," fixing the crime upon Hayden, and at once mischievously engendering a pre-judging public feeling, even before giving the suspected man the chance for a hearing.

I think that the day of trial was unreasonably protracted—to enable an expert to go to Europe in search of the various manufacturers of arsenic there—that by chemical, microscopical and mechanical examination of their product, inferential conclusions therefrom might be deduced that the arsenic in Mary Stannard's stomach caused her death, and that Mr. Hayden was the murderer.

Now the two causes of her death were legally demonstrated within the walls of the murdered girl's own home in Connecticut, and no foreign arsenic was required to prove an existing fact. As well might they have sent to Sheffield, England, for a knife, to prove that Hayden's knife in Connecticut was the instrument used inflicting the wound in the girl's neck.

The motive for killing Mary Stannard is the vague, suspicious statement in a letter asserting pregnancy, which condition a *post mortem* examination proved did not exist. The proof that a cause did exist rested upon the fallibility or gross mistake of two experts—the

one, Dr. Jewett, discovering a gestating *ovum* "outgrowth" emanating from the *right* side, while Dr. White discovered it making its evolution from the fallopian tube of the uterus on the *left* side.

Perhaps the most original and brilliant conception of forensic practice ever introduced into a criminal court of justice to prove the perpetration of a murder was the swearing of a dozen, more or less, *witnesses par excellence*—residents of the vicinity of the scene of the murder—who severally swore they "didn't do it." Here, again, the logical reasoning of the grave-digger's opinion is fully established.

"It must be *se offendendo*; it cannot be else.

* * * Argal, he that is not guilty of his own death,
Shortens not his own life."

"But is this law?" asks the first grave-digger. "Ay, marry is't," answers the second. Now, what are the expert proofs offered? Microscopic examination of numerous samples of arsenic procured from fifty different sources, which, like the ghosts in Richard's dream, all cry "guilty"—"*se offendendo*." It must be so. Worse than this, Professor White, after examining a stone with which it was supposed Mary Stannard was knocked on the head senseless to the earth, had expressed his opinion, at the preliminary examination at Madison, that it was stained with blood, and that he *had counted and measured some of the corpuscles* therefrom. After his examination, and before his appearance at the trial at New Haven, he discovered that this stain upon the stone was a *red* moss or lichen known as *algæ*: and Mr. Watrous drew from this gentleman the acknowledgment that experts may be mistaken.

Fifteen physicians were among the witnesses—from the burly, weather-beaten country doctor, to the delicate and learned city physician. About one-fourth of this learned body seemed to think that arsenic, whether taken into the *dead* or *living* stomach, would produce *inflammation*: others thought *not*; others "opined" that it might do so if taken into a living stomach, but not if taken into a dead one; and others, again, *vice versa*. Some medical fledglings had just cast their medical swaddlebands—their wisdom was most instructive of all.

We are free to say that we deem these experts demanded a little too much of public confidence, when, first impressing upon the minds of the jury, etc., the mathematical accuracy of their microscopical mensurable calculations of arsenic crystals of various manufacturers, they immediately after proceed to upset this mensuration by a *medial* "average" between two or more numbers, reducing the greater to a less number, and elevating the less number to a higher number, and then averaging them by a

mean numerical which is neither one nor the other. The prosecuting attorney did not average the dimensions of the dozen citizens who swore they were not the men guilty of the murder, to arrive at the "mean" dimensions of the man that perpetrated the crime—a great oversight!

Of micrometric mensuration put in evidence on the trials of Rubenstein for the murder of Sara Alexander, and the Rev. H. H. Hayden, charged with causing the death of Mary Stannard, the "mean average" of blood corpuscles by two microscopists—from a table of animal blood corpuscles—demonstrates the inaccuracy and the little reliance that can be placed on such fallible evidence.

The mean average dimensions of blood corpuscles numerically stated:

AT THE HAYDEN TRIAL.

In man	3.200
dog	3.800
ox	5.050

AT THE RUBENSTEIN TRIAL.

1.3400	} of an inch.
1.3200	
1.4269	

Then there are fifteen measurements of spots of blood "all within the *range* (!!!) of human blood." This is the sort of testimony sought by which to swear a human life away. Such a "*range*" of *evidence* is nothing more nor less than a miserable scientific subterfuge—a poor compromise to bridge the ignorance of exact evidence derivable from an in-exact science. It offers the meanest of speculative calculations which does not represent a unity, while it exhibits one of the most inexplicable problems influencing the human mind. Why such scientific eagerness with such superfluous acuteness to send a fellow-being to the gallows? Is it because the death warrant offers a diploma of expert infallibility? The highest courts make errors; judges with written laws and precedents before them make errors; counsel make errors; generals in the field make errors; politicians make errors; doctors make false diagnoses, and surgeons make mistakes; artists, mechanics, scientific navigators, all make errors. *BUT* the scientific blood and poison expert never makes errors. His instruments are complete and perfect; his mensurations defy a mathematical flaw! His sight is as perfect as the acuteness of his observations, which, with his experience combined, form a comprehensive atmosphere of the grandeur of positive infallibility. Science ends here. *The expert never gives the accused the benefit of a doubt!*

Had Chastine Cox allowed himself to remain *perdu*, and "held his tongue," the accuracy of detective science with their "*unerring clues*" would, in all probability, have been the means of convicting the venerable husband of the murder of his unfortunate wife; "for who could have bound her limbs in the manner they were found secured but an old

doctor like her husband, who made such knots as surgeons professionally use?" Then, too, there were stubs of tallow candles and common matches strewed about—just such tallow candles and matches as the doctor used. The detectives and the police *knew* they had the right man in him. The magistracy felt its truth, and the public believed the doctor a murderer in fact.

SCIENCE CHANGES.

THE SCENE OF ACTION, *a Vacuum in the Highlands.*

Song and Chorus of EXPERTS.

"Black spirits and white,
Red spirits and gray;
Mingle, mingle, mingle,
Mingle while you may."

Macbreath.—How now, you secret black and midnight hags,
What is't you do?

All.—*A deed without a name!*

Chorus.—And now about the caldron sing
Like elves and (experts) in a ring,
Enchanting all that you put in.

"Hubble, bubble,
Toil and trouble,
Now the trial is done."

—*New Play.*

The youthful Whittaker was not oppressed with flesh as was the unhappy Mrs. Hull, therefore he could hang with his feet fast to the bedstead and his head down upon the floor. He is young, and *used* to a harder and coarser life and usage; he could resist and endure the rougher treatment than she received, and therefore did not die of maiming, fright and asphyxia. He was not bound with ties and secured as *surgeons* make their professional knots, but he was strapped with "cadets' belts," from which he was expected to *release himself* by the aid (skin?) of his teeth, etc.

In the case of cadet Whittaker, we are furnished with another illustration of the grave-digger's *se offendendo* logic and philosophy, who, with Shakespeare, must live "for all time."

First Grave Expert.—Give me leave. Here lies the water—good; here stands the man—good; if the man go to this water, and drown himself, it is, will he, nill he, he goes—mark you that; but if the water come to him and drown him, he drowns not himself. Argal, he that is not guilty of his own death, shortens not his own life.

Second Grave Expert.—But is this law?

First Grave Expert.—Ay, marry is't, crowner's (military expert) law.

We believe we have extended this subject sufficiently demonstrating

the numerous discrepancies and inaccuracies of evidence in medical jurisprudence—evidence which, if merely imparted to illustrate the debating pastime of a society of natural philosophers, or to illustrate an elementary lecture of a course of studies, would prove as harmless as it would be beneficial in the pursuit of positive knowledge. But when inaccuracies of evidence are brought to bear with scientific implacability against the life of a human being, it is the proper time to review the errors of scientific testimony.

The injury thus done to the cause of accuracy and justice by speculative science it is impossible to estimate. Science is glossed over by a false philosophy and copied by lesser lights, and the disseminated errors become general, and the evil inflicted is past redemption.

Having thus fulfilled our intention, we conclude our remarks by citations from an able paper published in the *Comptes Rendus*—the journal of the Academy of Sciences, France—by Monsieur Hayem, who says that the variation of colored corpuscles of human blood is far greater than scientific men have heretofore supposed. M. Hayem finds that there are colored corpuscles in the human blood which are scarcely more than 10000 of an inch in diameter, and there are others—giant corpuscles, he styles them—which are not less than about 2500 of an inch; and while it is conceded that there is some variation, it is supposed to be within very narrow limits. The photographs of Seiler, Woodward and others show a very small average variation. Monsieur Hayem, however, maintains that the *previous condition* of health has an important influence on the number of the *smaller* corpuscles. They are predominant, for example, in patients recovering from fevers, anaemia, etc.; their variation is greater in *women* than in *men*, and appears to be subject to *slighter* causes in women than in men, so that the average of any number of women selected at random would vary extremely from the general average as stated in the books. The number of giant corpuscles in the blood, according to M. Hayem, is greatest in extreme infancy, and *decreases* with more or less constancy as adolescence advances, and the full physical growth of the organism is attained. There are, then, three important factors to be taken into consideration, each of which may completely nullify the general average based upon a few examinations mostly of males at an adult age. The first is sex, the variation of the average in the female being exceedingly great under normal conditions, and subject to very great fluctuation from very slight disturbing causes. The second is state of health, which produces far greater variation, *disease for disease*, in the female than in the male. Then comes a

decrease of the large corpuscles, and an increase, relatively, of the smaller ones, as the organism advances toward maturity. Taking all the points into consideration (and *advanced* microscopists in *this* country are fully aware of their existence), M. Hayem concludes the tendency of late years has been, to speak very *guardedly* and *doubtfully* as to the value of evidence based upon the treatment of corpuscles which have been *restored after having been dried by exposure to the air*, EXCEPT WHEN SUPPORTED BY CORROBORATING FACTS.

REGULAR ANNUAL MEETING
OF THE
FIRST DISTRICT DENTAL SOCIETY,
STATE OF NEW YORK, APRIL 6TH, 1880.

HELD AT THE OFFICE OF DR. W. D. TENISON, 45 EAST 28TH STREET.

CLINIC REPORT.

Dr. W. D. TENISON, Chairman: The clinic to-day was of very considerable interest, and more largely attended than any since I have been connected with them, about one hundred and fifty members of the profession being present. The object of particular interest was a contest which had been arranged between several gentlemen to test the merits of their various favorite mallets.

The contestants were Dr. W. H. Webb, of Lancaster, Dr. E. Parmeley Brown, Dr. Wilson, Dr. M. Rynear, and Mr. B. A. R. Ottolenqui. In the opinion of a number of those present, the match partook a great deal of the nature of a sort of go-as-you-please contest. Each gentleman was provided with a steel matrix, divided through the centre, the whole embedded in plaster, in which the fillings were to be packed. Time was taken both at the commencement and finish of the operations; the fillings were taken out of the matrix and weighed, thus determining who had packed the largest amount of gold in a given time.

Dr. WEBB used an electric mallet, which he tells me was made for his own use in his individual practice. He also used No. 30 cohesive gold.

He commenced filling at 3.15, P. M., and finished at 4.16, P. M. Time consumed, one hour and one minute; weight of plug, $31\frac{1}{4}$ grains. A piece was broken off of that plug and lost in the process of removing it from the matrix; the weight of this piece, as near as could be estimated, was about a quarter of a grain, making the total weight $31\frac{1}{2}$ grains.

Dr. BROWN commenced at 3.15, P. M., and finished at 4.14, P. M.; length of time consumed, fifty-nine minutes; weight of plug, $28\frac{1}{2}$ grains. That plug was badly broken in its removal, and a portion of it lost; how much it is impossible to say, as we did not see it, but should judge about the same sized piece that was lost in Dr. Webb's case might have been lost in the case of Dr. Brown, which would make the total weight $28\frac{3}{4}$ grains. He used the steel mallet and No. 6 cohesive gold.

Dr. WILSON also commenced at 3.15, P. M., and finished at 4.20, P. M. Length of time consumed, one hour and five minutes; weight of plug, $29\frac{7}{8}$ grains. He used the ordinary lead mallet and No. 4 cohesive gold.

Dr. RYNEAR commenced at 3.30, P. M., and finished at 4.39, P. M. Time consumed, one hour and nine minutes. Weight of plug, $31\frac{1}{2}$ grains. If Dr. Webb is allowed the quarter of a grain lost in removing his plug from the matrix, his filling and that made by Dr. Rynear would be of equal weight; difference in time, eight minutes in favor of Dr. Webb. Dr. Rynear used a heavy lead mallet of his own invention, named the "Atkinson." His packing was made with quarter century gold No. 5.

Mr. B. A. R. OTTOLENQUI commenced at 3.30, P. M., and finished at 4.18, P. M., making the shortest time—forty-eight minutes. He used an automatic mallet, and used it in a peculiar manner—every pressure did not make a blow, and he took the mallet up and struck a blow with it; which certainly is a very peculiar way of using an automatic mallet. The weight of his filling was $27\frac{7}{8}$ grains, the lightest weight of any. He also used quarter century gold No. 4. Dr. Rynear inclines to the desire to have a further test as to the density of the plugs, determined by specific gravity; he being unwilling to concede that the piece lost from Dr. Webb's plug weighed a quarter of a grain. Several cases were presented for examination and diagnosis. I will first mention a case which was reported upon at the last clinic, and which Drs. Atkinson and Mills diagnosed as an unerupted tooth, together with necrosed bone, and advised free opening, dissecting down and laying the flaps back and removing the tooth and necrosed bone. It was a patient of Dr. J. A.

Osmun, of Newark, N. J. He carried out their advice, and found the diagnosis was correct. The tooth that was removed was presented for examination, and found to be an upper central; the crown was at right angles with the root. Dr. Marsh, of Elizabeth, presented the case of a gentleman who was similarly affected, and having a fistulous opening in the mouth. This case was also diagnosed as an unerupted tooth, and as the patient wished to have it removed at once, Dr. A. C. Hawes removed it, and it was found to be a canine lying transversely across the palatine arch.

Dr. BARNES presented a patient for examination who had two superior bicuspids removed. He also had an opening on the anterior side of the first molar, where it was thought possible there might be an opening into the antrum. It was probed, but no such opening could be found. The probe passed up to the end of the palatine root, where a gathering was in the habit of forming from time to time. Pus exuded from the opening made by the probe, and the patient experienced great relief therefrom. The gentlemen who examined the case recommended free opening, and burring away in case any necrosed bone was found.

Dr. MEAD, of Greenwich, Conn., presented a lady for examination, suffering from absorption of the palatine surface of the process of an upper superior lateral, and the tooth was growing out of the arch very much, towards the lip. This growth was not caused from any crowded condition of the teeth, as there was plenty of room between the canine and bicuspid teeth, showing clearly that the tooth was not thrown out of its place by crowding. The advice given was to draw the tooth back into position by the usual methods, and hold there until it became firm.

Dr. W. G. HILLER commenced the operation of filling a tooth at the last clinic, but was not able to finish in time for me to report upon it. He brought the patient to-day to give me an opportunity to examine the filling, which I found to be very handsomely done.

Dr. J. S. CAMPBELL exhibited his new mode celluloid machine, together with some practical cases of celluloid and rubber, which were certainly very handsome pieces of work, and which he claims will retain their color if made according to the process which he recommends, with his machine. I mentioned to him that in all the cases of celluloid work I had ever seen, discoloration took place shortly after, but he assured me he had cases in the mouths of patients that were as bright to-day as when first put in.

Dr. BOEDECKER exhibited a lamp which gives a reflected light. He

is going to explain it to the Society. It certainly is an admirable thing in cases where we want a clear light.

Dr. C. E. LATIMER filled a second upper bicuspid, on the anterior surface, with globe gold No. 4. The doctor labored under many disadvantages, being kind enough to take a patient who came from New Jersey to meet Dr. Underwood (who did not appear), and being under the necessity of using such materials and instruments as could be obtained in the clinic room. The patient expressed himself as very much pleased indeed with what had been done by Dr. Latimer.

This being the regular annual meeting, the usual order of business was dispensed with, and the Society proceeded to the election of officers, with the following result:

President, Dr. J. W. Clowes; *Vice-President*, Dr. W. T. La Roche; *Secretary*, Dr. Geo. W. Weld; *Treasurer*, Dr. C. Miller.

CENSORS.

Dr. W. A. Bronson, Dr. A. L. Northrop, Dr. C. A. Woodward, Dr. E. A. Bogue, Dr. F. M. Abbott.

DELEGATES TO STATE SOCIETY.

Dr. W. D. Tenison, Dr. Geo. W. Weld, Dr. J. M. Howe.

Adjourned.

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY
OF GREAT BRITAIN.

DISCUSSION. (*Continued from last issue.*)

The PRESIDENT said he thought members of their profession might congratulate themselves on the fact that medical men now paid more attention than formerly to the effects of local irritation. He had met with many cases in which the patient might have been saved much suffering had some of the facts to which Dr. Brunton had called attention been more generally known. He remembered especially the case of a

gentleman whose health had been greatly impaired by severe neuralgia, so that when he came to Mr. Woodhouse he was reduced to living on brandy and milk, and was miserably thin and weak. Mr. Woodhouse found that both upper canines were carious, the pulp of one being exposed and inflamed, though the patient had never had any pain in it; the other was not so bad. He destroyed the pulp of the one and filled the other. The patient had no pain afterwards and soon regained his health. He hoped that Dr. Brunton's paper would again draw the attention of medical men to this important subject.

Mr. CHAS. TOMEs said he wished in the first place to ask Dr. Brunton a question. He had referred in his paper to some experiments which had been performed by Prof. Schiff, in which he found that irritation of the branch of the fifth nerve supplying the teeth produced a reflex effect on the eye of the same side. Mr. Tomes would be glad if Dr. Brunton could inform him on what animals these experiments were tried and in what way the impairment of vision was tested. The correctness of these observations was of some practical importance, since division of the inferior dental nerve was a recognized surgical operation which was practiced as a last resource in cases of obstinate neuralgia. He had performed the operation a good many times and had never known it to be followed by dimness of vision, but if it should appear that there was some risk of this occurring, of course the operation must be abandoned.

Then, with regard to the general pathology of migraine. Dr. Brunton had advocated the view that it was due to spasmodic contraction of the vessels. If this were so, the pain should always be relieved by nitrite of amyl, but this was not invariably the case, even though the nitrite was so administered as to produce extreme vascular relaxation. The inhalation of ether again produced great vascular relaxation, evidenced by flushed face, full bounding pulse, etc., but on one occasion he had distinct evidence of the occurrence of an attack of neuralgia whilst the patient was fully under the influence of ether. This was in the case of a man who suffered from very severe paroxysmal attacks of neuralgia affecting the region of the inferior dental nerve and always accompanied by a spasmodic twitching of the lip. Mr. Tomes first tried stretching the nerve at the mental foramen, and as this gave no relief, he cut down upon it again and removed a portion. During one of these operations, whilst the patient was fully etherized, the peculiar twitching of the lip occurred which indicated a paroxysm of neuralgia.

Lastly, Dr. Brunton had quoted some German authority who asserted

that the spasm of the masseter which was not unfrequently set up by the wisdom-teeth during the process of eruption, was caused by the tooth tearing through the fibrous attachment of the muscle, and that it was thus due to direct, and not to reflex, irritation. But the tooth, if erupted in the usual situation, did not approach anywhere near the attachment of the masseter ; and if the tooth was displaced outwards, the external plate of the jaw was so exceedingly thick and hard, that the tooth, on coming into contact with it, was always diverted from its former course. He thought, therefore, that the view usually held, viz., that the spasm was of reflex origin, was more likely to be correct.

MR. SEWILL thought that the Society was to be congratulated on the fact that it would have in its "Transactions" the best account of the connection of the teeth with nervous disorders which had yet been published. Dr. Brunton had collected from various sources some remarkable cases of serious disorders of the nervous system resulting from dental irritation, but he himself had been greatly impressed by the extreme rarity of such cases in practice. He had been for twelve years dental surgeon at a metropolitan hospital ; he had seen during that time not only a large number of patients who had applied to him directly, but had also had a considerable number of patients referred to him by his medical and surgical colleagues, and he had kept careful records of all exceptional cases. Yet among all these patients he had not met with a single case of severe nervous disorder which could be said to be directly dependent on disease of the teeth. Some nervous diseases, such as epilepsy, might be aggravated by dental irritation, but as the direct result of this he had met with nothing more serious than neuralgia and spasm of the masseter. He had not even met with a case of distant neuralgia which could be assigned to this cause ; the pain was, in his cases, always confined to the head and face. He might remark, also, that Dr. Brunton's personal experience was exceptional ; *incipient* caries rarely produced neuralgia ; its occurrence generally indicated the existence of a large cavity. Nor did he think that *incipient* caries would cause enlargement of a lymphatic gland. If this was present, inflammation of the pulp, alveolar abscess or periostitis would almost certainly be found. On the other hand, there was no doubt that dental neuralgia might intermit, although the exciting cause was still present, and also that it could be cured, temporarily at least, by tonics. An interesting case of spasm of the masseter, caused by dental irritation, had lately been related by the President of the College of Surgeons, of Ireland, at a meeting of the Surgical Society of Ireland, and would be found re-

ported in the *Medical Press and Circular*. It should be remembered that inflammation of the parts about the jaw might cause a stiffness which would closely resemble spasm of the masseter, and, as a matter of fact, inability to open the jaw was more often due to inflammatory changes than to nervous spasm. The remarks he had made respecting the rarity of severe nervous symptoms as the result of dental irritation referred only to adults. In infancy grave nervous disorders did no doubt occur not unfrequently from this cause, but dentists did not as a rule see much of this class of cases.

MR. COLEMAN said he was surprised to hear that Mr. Sewill had never met with cases of nervous derangement which were due to dental irritation. He himself had published several very clear cases in the *Lancet* some years ago and had seen many since. Quite recently, a little girl was brought to him who had become subject to fits; he removed some carious teeth and the patient had no more fits. The late Mr. Holmes Coote had assured him that talipes equinicus was more frequently due to nerve irritation set up during teething than to any other cause. He would take that opportunity of thanking Dr. Brunton for his paper, which, if it did not set forth any new facts, certainly gave a more scientific explanation of the pathology of these cases than had yet been attempted.

MR. GADDES said he had lately met with a case which showed clearly the effect of dental irritation in aggravating nervous disease. A girl, aged seventeen, came to him at the National Dental Hospital; she had been subject to epileptic fits for two years, and when she came to him was having on an average two a week. There was no family history of epilepsy. Some of the bicuspids were much broken down by caries and had decomposing pulps. Some time previously she had broken her upper central incisors in one of the fits, and the pulps of these teeth also were exposed and suppurating. As the girl had some pretensions to good looks, which would have been materially affected by the extraction of the teeth, and the wearing of a plate by an epileptic was dangerous, he did not remove them, but cleared out and filled the pulp canals. The result of this treatment was that during the next three months the girl had but one fit, showing an evident connection between the state of the mouth and the fits.

THE PRESIDENT here called attention to the fact that the hour at which the meeting usually terminated had almost arrived. He thought, however, that considering the interest and importance attached to the subject under discussion, the members present would probably wish to prolong the debate for another half hour.

A motion to this effect having been proposed and seconded by Mr. Oakley Coles and Dr. Walker, was put to the meeting and carried unanimously.

Mr. OAKLEY COLES said he thought every dentist must have met with cases like those referred to by Mr. Coleman and Mr. Gaddes. Not long since a girl was brought to him who had become subject to epileptic fits ; he extracted two very carious teeth and she had had no fit since. He was much surprised to hear Dr. Brunton's report of the result of Prof. Schiff's experiments on the inferior dental nerve. He himself had never known any impairment of vision follow its division. He remembered a case in which the late Sir William Fergusson divided this nerve fourteen times on the same patient ; after each operation the man obtained relief from pain for some weeks, or even a few months, and he certainly never made any complaint of dimness of sight.

Dr. WALKER said he had seen many instances of the serious effects of dental irritation on the nervous system of young children, especially when they were weakly or had a scorbutic tendency. He would especially instance one family, all the surviving members of which had been for some years past constantly under his observation. The first three children died during the period of the first dentition ; after this, orders were given that the others should be taken to the dentist as soon as they were six months old, and afterwards whenever they suffered any little indisposition. Since these regulations had been carried out seven children had been successfully reared. The children were brought to him directly any symptoms of irritation showed themselves ; he never lanced the gums, but scarified them freely with a sharp point. On several occasions the good effects of this treatment had been most marked. For example, the father going home to his country-seat, on a Saturday, noticed that one of the children squinted ; he was sent to Dr. Walker on Monday, the squint still persisting, but next day it had entirely disappeared. Another child lost the use of one leg for three days ; the gums were scarified and he was well again directly.

About nine years ago a child was brought to him who had been for some time subject to epileptic fits. Her general health was very bad and her teeth much decayed. She remained under treatment for fifteen months, and as the mouth was got into better order the fits gradually disappeared, and she had since turned out a very clever girl.

A member said he had met with a very similar case. A boy, aged nine, was brought to him by his mother, who stated that he had suffered for ten months past from pain in the face and frequent fits. On examining

the patient's mouth, he found that the second dentition was backward ; a lower molar was also decayed, though not much, still the boy said he had suffered occasional pain in it. He filled this tooth and removed the deciduous left lower lateral and canine. A fortnight afterwards the patient returned much improved in health and from that time he had no more fits.

Mr. F. CANTON said he should like to ask Dr. Brunton whether he thought that paralysis of the arm or leg could occur in an adult as the result of dental irritation ? He had met with a case in which pain in a lower molar had been accompanied by spasm of the muscles of the arm and leg, followed by partial paralysis. As the patient was an anaemic young lady, and the effects seemed disproportionate to the cause, he looked upon the affection as being due to hysteria. At the same time he took care to impress upon the patient the idea that the tooth was the cause, and that its extraction would be followed by the complete disappearance of the paralysis. This did actually come to pass, but he did not feel at all sure as to the mode in which the cure was effected.

Mr. J. S. TURNER said his own experience enabled him to answer Mr. Canton's question in the affirmative. About two years ago a gentleman, aged twenty-eight, was brought to him from the country. The patient came into his consulting room held up on either side by his father and brother, being unable to walk, and sometimes even to stand, without this assistance—he had also severe trismus. The cause of all this was a lower wisdom-tooth which had grown horizontally outward, perforating the strong outer plate of the maxilla, so that the crown was embedded in the substance of the masseter. The patient was a stout, healthy man, of somewhat nervous temperament, but certainly not inclined to hysteria. The tooth was removed with considerable difficulty, and the patient made a speedy and complete recovery.

The following case was also interesting from the difficulty of the diagnosis, the usual order of things being reversed. A lady consulted him on account of periodical attacks of most intense left hemicrania : any great excitement would bring on an attack—as, for instance, when her husband came home from sea—and whilst the pain lasted she was obliged to shut herself up in a dark room, and was unable to see anybody or do anything. She had a most splendid set of teeth and had never suffered the slightest pain in any of them, but the wisdom-teeth were only partially erupted, and as on careful inquiry the pain appeared to be ultimately referred to the upper dental region, Mr. Turner suspected that the left upper wisdom-tooth must be the source of irritation.

He therefore removed it, and found that it was carious on the buccal surface, the disease having been hidden by the gum. From that day the patient had no more neuralgia.

Mr. DENNANT said that had it been necessary he could have confirmed from his own experience nearly all that Dr. Brunton had said respecting the effects of dental irritation on the nervous system, but as so much had been said on this subject he would relate a case which would warn members not to confine their attention to a search for decayed teeth as the cause of neuralgia of the head and face, since irritation of other cranial nerves might by reflex action produce very similar results. A lady, of middle age, consulted him on account of severe neuralgia of the head and face, which she thought might be due to a diseased tooth ; he examined and percussed the teeth, but could find nothing. A paroxysm of pain came on during the interview, and the patient at once asked if there were any flowers in the room, adding that the smell of flowers always had this effect. There were some roses on the table at the time. Any irritation of the olfactory nerve would bring on the pain—even the smell of smoke. Mr. Dennant recommended mountain air, and she then said that she had suffered in a somewhat similar manner fifteen years before, that the same advice was then given to her, and that she had derived great benefit from the change.

Mr. S. J. HUTCHINSON said he should like to ask Dr. Brunton three questions :—(1) Had he any experience of the value of tincture of Hamamelis in the local treatment of facial neuralgia ? (2) He had understood him to say that the inhalation of chloroform in small quantity was apt to exert a depressing effect on the action of the heart, but that when given in larger amount this effect was counterbalanced by contraction of the small arteries : how did the action of nitrous oxide differ from that of chloroform in these respects ? (3) He had referred to the fact that purgatives would cure neuralgia : could he give any explanation of the way in which this was effected ?

The PRESIDENT having called upon the author of the paper for his reply,

Dr. BRUNTON said that as the time at his disposal was very short he could only deal briefly with the most important of the questions which had been put to him—those specially requiring an answer.

He could not then reply to Mr. Tomes' first question, for he had been unable to obtain a copy of the original paper by Prof. Schiff, but he hoped to be able to get one in a few days, and would then give Mr. Tomes the information he required. Mr. Tomes doubted his explana-

tion of the pain in migraine, because nitrite of amyl did not relieve it, although it produced relaxation of the vessels. But the fact was that the nitrite did not uniformly dilate; it could not dilate a vessel which was contracted by the irritation of a vaso-motor nerve. Hence, although it produced great *general* vascular relaxation, it might not be able to suspend the reflex action of the vaso-motor nerves, and the *local* contraction due to this cause would persist. The same thing probably occurred during the administration of ether, but this he could not positively assert.

He would admit the justice of some of Mr. Sewill's criticisms, and would make some verbal alterations in his paper before it was printed.

In answer to Mr. Canton, he would say that dental irritation might certainly cause paralysis in an adult as well as in a child. The brain centre which presided over the movements of the hand, and that which governed the mouth, were so closely connected, that excessive stimulation of one centre might easily derange the functions of the other.

With regard to Mr. Hutchinson's questions. He had never used the tincture of *Hamamelis Virginica* for dental purposes: it had been recommended to him as a remedy for the irritation of mosquito bites, and he tried it, but with very unsatisfactory results. As to the action of chloroform on the heart. The nerve from the tooth would act upon the vagus centre and upon the vaso-motor centre in the brain. The vagus centre being irritated, would tend to weaken, or even to stop, the heart's action, but the vaso-motor centre being equally irritated, would cause contraction of the arterioles and thus no fall of blood-pressure would occur. But when chloroform was administered, its first effect (*i.e.*, when given in small quantity) was to paralyze the vaso-motor centre; the action of the vagus being thus left unopposed, cessation of the heart's action might occur without any simultaneous contraction of the arterioles, there would then be an immediate rapid fall of blood-pressure and fatal syncope might result. Nitrous oxide was opposed to chloroform in that it, or the venous condition of blood which it induced, acted as a strong stimulus to the vaso-motor centre, and thus the danger from syncope was reduced to a minimum. Mr. Hutchinson's third question was one which it would be impossible to answer briefly, since it opened up a very complex and difficult subject, and he would not therefore attempt it.

On the motion of the President, a hearty vote of thanks was given to Dr. Brunton and to the contributors of the casual communications.

The meeting then terminated.

THE PHYSIOLOGY OF THE TURKISH BATH : Being an Experimental Inquiry into the effects of Hot Dry Air upon Man.

BY WILLIAM JAMES FLEMING, M.D.

With the exception of a paper in the *Lancet* of May 20, 1876, by Dr. J. C. Bucknill, and another read by Dr. Cameron at the meeting of the British Medical Association in 1877, all accounts of the Turkish bath have been confined to general descriptions of the details of the process, and of the sensations experienced during its use. Except in these papers, I can find no record of any attempts to measure with scientific accuracy any of the various powerful effects which it is universally acknowledged to produce upon the bodily functions. In the hope of determining by experiment the exact action of hot dry air upon man, I have for several years carried on a series of observations.

I presume that my readers are all acquainted with the details of a Turkish bath. If not, there are many books from which they can be learned—notably that by Prof. Erasmus Wilson upon the subject. Suffice it to say, that the essential part of the process consists in the immersion of the body in dry air at a temperature varying from 130° F. to 200° F. for a considerable time (half an hour to an hour, generally), and subsequent douching with cold water. The accessories of shampooing, etc., are non-essential.

Our power of tolerating very great heat, provided the air is dry, without injury or inconvenience, has long been known. Indeed, Drs. Forsyth and Blagden more than a century ago submitted themselves to a temperature of 260° F. (127° C.) without great inconvenience.

All the experiments were made upon myself, invariably before dinner, say 4 to 6 P. M., and about two hours after lunch. They were performed in the spacious bath of the Arlington Swimming Club, Glasgow; and I may here mention, for it is an important factor, that this is heated by Constantine's system, which consists in an arrangement of stoves by which a constant current of pure air is drawn from the outside atmosphere, heated by passing through a species of oven, and driven into one of the apartments of the bath with such force that it traverses the whole suite of rooms, parting with some of its heat in each, and ultimately passing out from the last into the air. By this means not only is the air for breathing, but also the air in contact with the skin, constantly renewed, so that a layer of watery vapor does not, as in

all baths heated with stationary air, soon cover the body, and convert the bath into a vapor one. The freedom from all feeling of oppression, even at very high temperatures, experienced in a bath thus heated, is the best proof of the excellence of the system.

The temperatures at which the experiments were conducted were generally an initial heat of about 170° F. for a few minutes, to produce diaphoresis rapidly, followed by a subsequent temperature of about 130° F. during the remainder of the time spent in the hot rooms. This, I believe, is the best system for habitual bathers, as perspiration being once freely established in the hottest room, is kept active by the lower degree of heat.

What I set myself to investigate was the effect of immersion in this hot dry air—

1. Upon the amount of material eliminated from the body in excess of the normal.
2. The alteration produced in the temperature of the body.
3. The influence upon the pulse-rate.
4. The influence on the respiratory rate.
5. The alteration in the composition of the urine.
6. The composition of the sweat.
7. The arterial tension as shown by the sphygmograph.

We have now to consider the modes of making the experiments under each of the above heads, and the results obtained.

WEIGHT.—First, as to the amount of material eliminated from the body in excess of the normal. It is evident that to estimate this it was necessary to ascertain the exact weight before and after the bath, and the quantity of water drunk during the time. For this purpose I employed a beam turning with $\frac{1}{4}$ oz. when loaded with 3 cwt., with which all the weighings were done.

As the time occupied by the experiments varied considerably, I have in the following table reduced the totals to loss per minute:

TABLE I.

Experiment.	Actual loss in Ounces. Drachms.	Total time in minutes.	Loss per minute in Drachms. Grains.
1.....	60 0	60	8 0
2.....	38	6. 55	38 $\frac{1}{5}$
3.....	22	4. 30	6 0
4.....	35	0. 55	5 5 $\frac{1}{5}$
5.....	24	4. 40	4 54
6.....	24	0. 40	4 48

This gives an average total loss of weight of 34 ounces 1 drachm in an average time of 46 minutes 40 seconds; that is, an average loss per hour of 44 ounces—per minute of 5 drachms 53 grains.

The amount of water drunk averaged 4 drachms $44\frac{4}{7}$ grains per minute, so that the excess of loss over water consumed is $67\frac{3}{7}$ grains per minute.

Seguin calculates the average normal loss by skin and lungs as 18 grains per minute.

Now, all this material must have been removed either by the skin or lungs, no doubt by both, and I fear it is impossible to estimate how much passed off by each of these channels. However, it is a fact of great importance to know that by these two channels can be eliminated in an hour more than 44 ounces of the constituents of the body—not much less bulk than is normally excreted by the kidneys in 24 hours.

No doubt the amount of the solid constituents is much smaller, although by no means inconsiderable; nevertheless, even if we consider what is lost as pure water, it is obvious that the interchange of such a quantity of fluid in the economy must produce, or at least determine, important metamorphoses. In fact, the process may be fairly considered as a washing of all the tissues of the body from within outward.

TEMPERATURE.—Next, as to the effect upon the temperature.

The estimation of this presented some difficulty, as it is obvious that the thermometer employed must all the time be rigorously enclosed in the body, and no part of it ever permitted to come in contact with the hot air. To effect this there seem only two means available, its insertion into the rectum, or its retention in the closed mouth. The necessity of walking from a cool room into a hot and back again militated strongly against the first of these situations, so I had an instrument constructed of a U-shape, originally with the intention of placing it on the floor of the mouth, with a leg on each side of the frenum of the tongue. When the instrument was in this position it was found to produce such discomfort that I was obliged to use it lying in the cheek outside the jaws. In this position all the readings were obtained. The thermometer was set, put in place, and the mouth closed in a cool room, the hot room then entered, the mouth being kept rigorously shut, and breathing being carried on by the nose until, after the lapse of ten minutes, the cool room was again entered, and the thermometer read and noted. In this way as far as possible I avoided the direct

action of the hot air on the thermometer, and I do not think that it can have been much affected either by the heat passing through the cheeks or from the nasal cavity. It is possible, although I tried to avoid this, that some small quantities of heated air may have entered the mouth from behind and affected the instrument. However, the regularity of the results obtained in many experiments militates against the probability of this source of error having produced much effect. The chart gives the average of a number of observations.* I do not, however, vouch so much for absolute as relative accuracy of the figures, since from the peculiar construction of the thermometer it is probably not to be entirely depended upon. As the amount of alteration, rather than the actual temperature, is what we wish to discover, this is of less moment.

Thus we have a rise of 3.7° F. produced by the bath, and this highest temperature was always reached at the end of 50 minutes. On the few occasions on which the experiment was prolonged to 60 minutes, a tendency to fall during the last part of the time was observed.

It is worthy of note that in the experiments described by Dr. Bucknill and Dr. Duckworth Williams, the rise of temperature observed was 1.7° , and as the period of immersion in the cases recorded by them was always very short, this coincides exactly with my own observation at the end of ten minutes. As in Dr. Cameron's observations the whole of the thermometer was not enclosed in the mouth, I think the higher temperatures he obtained are probably due to direct heating of the instrument.

PULSE.—The pulse follows much the same course as the temperature, but the variations are greater. Especially did the rate before the bath vary on different days. Besides, the effect of thirst was observed to be an acceleration of the pulse-rate, which again fell after water was drunk. This was probably due to the reflex effect of the cold water, and perhaps somewhat to the irritating action of the too highly concentrated blood upon the heart.

The following chart shows the average of many observations.†

* The chart is omitted. The number of observations was 19, at intervals of five minutes. Average normal temperature..... 97.65° F.

“	rise at end of ten minutes.....	1.06
“	highest point.....	101.03
“	after bath.....	97.02 [Ed.]

† Twenty at intervals of ten minutes. Pulse rate: 116, 114, 112, 110, 108, 106, 104, 102, 100, 98, 96, 94, 92, 90, 88, 86, 84, 82, (before bath) 80, (after bath) 78.

The rise in the pulse-rate during the first ten minutes was a little over 13 beats. The maximum, 116, was, as in the case of the temperature, attained at 50 minutes, after which a slight fall took place. After the douche the return was nearly but not quite to normal on the average, but in one case it was as much as 14 lower than before the bath. On this occasion the initial rate was high. I will again refer to this in considering the ratio subsisting between the pulse and respiration rates.

RESPIRATION.—In the paper in the *Lancet* referred to above, Dr. Bucknill's chief conclusion is that the rate of respiration is diminished during the stay in the hot rooms. Up to a certain point I have been able to confirm this result, as the following average chart shows.*

Here we have a marked fall as the first effect, followed by a steady rise to a point higher than the initial, and after the bath a fall to near the number previous to the bath. This does not altogether coincide with the results recorded by Drs. Bucknill and Duckworth Williams in the paper referred to. They give the average diminution in the respiratory rate as 4.2, which closely corresponds with my result, namely, a diminution of 4; but they make no mention of the subsequent rise which I always found. This is probably due to the short time they kept their patients in the bath. They, besides, merely state that the observations were taken during the profuse perspiration, and not the time after entering the hot room. The average rates of pulse and respiration before the bath were in my observations—pulse, 79.4; respiration, 22.5. That is a ratio of 2 to 7, somewhat higher than the normal. At ten minutes the rates were—pulse, 92.5; respiration, 20.8; a ratio of 2 to 8.8, which is nearer the normal; at fifty minutes, 115.5 to 25.4; a ratio of 2 to 8.6. The well-known difficulty of not altering the rate of breathing when counting it yourself may have introduced error into these figures, but on several of the occasions medical friends counted for me. Their estimations nearly coincided with my own, except in the initial rate; and as my own result was abnormally high, I have in the above calculations adopted theirs.

SWEAT AND URINE.—As the mutual relations of the constituents of the sweat and urine excreted during the bath are the most important parts of this branch of the investigation, they will best be treated together. The method adopted for procuring the sweat was the enclosure of one of the arms in an india rubber bag, confined round the shoulder

* Seven observations at intervals of ten minutes: 26, 25, 24, (after bath) 23, (before bath) 22, 21, 20.

by elastic bands, and furnished with an exit tube, closed by a clip. By this arrangement about 2 oz. sweat could be collected during an ordinary bath. The urine was passed immediately before entering the bath, and again after complete cooling. The sweat thus collected was found to have an average specific gravity of 1006.3, and to be faintly alkaline or neutral. The urine after the bath had a greater specific gravity (12° of urinometer) than before the bath.

I have to thank Mr. W. J. Mackenzie for the careful chemical analyses he has made of these fluids. From the small quantities I was able to place at his disposal, the estimation was necessarily confined to the principal constituents—chlorides and nitrogenous substances—which we presume to be urea. For the first of these the process he adopted consisted in evaporation with a little nitrate of potash, ignition to destroy organic coloring matter, and precipitation with silver nitrate.

The urea was estimated by Russel and Wert's hypobromite solution.

The mean of his results stated per thousand is given in the following table :

TABLE II.—SWEAT AND URINE. IN 1,000 PARTS.

	Urine before bath.	Sweat.	Urine after Bath.
Chlorides	5.68.....	6.05.....	3.65
Urea	17.61.....	1.55.....	19.18

From this we see that the sweat contained more chlorides than the urine before the bath, and nearly double the amount present in the urine secreted during and immediately after the bath. Whether the abnormally small amount of chlorides existing in the urine (not much more than half the amount given by Vögel as normal) influenced this or not, further experiments on different individuals will be required to ascertain, and whether this diminution of the urinary chlorides, after free action of the skin, has any bearings on the well-known reduction in their amount which is found in pneumonia and other acute diseases, seems worthy of clinical investigation.

The urea, on the other hand, follows a very different course. We have a considerable quantity in the sweat, and an increased amount in the urine secreted during and after the bath. The existence of urea in the sweat is doubted by many physiologists, and out of the three principal analyses of this excretion by Favre, Shottin, and Funke, Favre finds only 0.044; Shottin, none; Funke, 1.55, per 1,000. The absolute identity of the latter with Mr. Mackenzie's result is interesting.

The amount of urea in the urine before the bath is about normal. The increase in the urine after the bath is probably due to increased density of the fluid, and the high temperature which the body reaches —a temperature like that of fever.

BLOOD PRESSURE.—The difficulty of obtaining sphygmographic tracings in the bath was greater than I expected. I did not venture to expose a Mareys sphygmograph to the heat and moist handling necessary; besides, I doubt if it is possible to manipulate the smoked papers properly under the circumstances. The Tambour sphygmograph, which I devised some years ago, gave some fair results, but even it was difficult to manage, and the effect of the heat on the india rubber membrances may have somewhat altered the tracings. However, I think we are justified in concluding that for the first ten to fifteen minutes the force of the heart beat is increased, and that after immersion for about twenty minutes it becomes feebler. This is shown by the diminished height of the tracing. The rounding of the summit and decreased distinctness of the dicrotic notch seem to point to an increase of peripheral resistance, and perhaps to the injection of a smaller quantity of blood into the vessels at each ventricular contraction. The condition of the circulation seems to be a great dilatation of all the superficial vessels, and therefore a diminution of the quantity contained in the heart and deeper trunks. This probably produces a faster action of the heart, as the observations on the pulse show actually took place; but it appears to the author that the necessary result of great capillary dilatation is increase, not, as usually supposed, diminution, of peripheral resistance. No doubt the opposite condition, capillary contraction, causes an increase of peripheral resistance, from the greater difficulty of forcing the blood through the narrow channels; but in the case of dilatation, the vessels contain an immensely greater mass of blood, and this mass must require a greater expenditure of force to set it in motion, so that increased peripheral resistance may arise as well from excessive distension as from contraction of the capillaries. It is probable that up to a certain point this is counterbalanced by the greater facility of flow from diminution of friction, but I conceive that when the increase of the capacity of the capillary vessels is large, and extends over a wide area, the opposite effect is the more likely to accrue. This, then, is the condition brought about by the hot air, in my case at least.

The trace after the bath was absolutely normal, while that obtained before the bath was one of decidedly low tension.

CONCLUSIONS.—To sum up; it has been shown that a very large quan-

ity of material can be eliminated from the body in a comparatively short time by immersion in hot dry air, and although the greater part of this is water, still solids are present in quantity sufficient to render this a valuable emunctory process.

The temperature of the body and the pulse-rate are markedly raised.

The respiration falls at first, but afterwards is less influenced than would be expected *prima facie*.

The urine is increased in density, and deprived of a large portion of its chlorides, while, if anything, an increase in the amount of urea is produced.

The principal effect upon the arterial tension seems to be an increase produced by the greater rapidity of the heart's action combined with the dilated, we may almost say gorged, condition of the capillary circulation.

From these conclusions we may deduce the following practical observations as to the use of the Turkish Bath in medicine :

Its most important effect is the stimulation of the emunctory action of the skin. By this means we are enabled to wash, as it were, the solid and fluid tissues, and especially the blood and skin, by passing water through them from within out. Hence, in practice, one of the most essential requisites is copious drinking of water during the sweating.

The elevation of the temperature, and more especially of the pulse-rate and blood-pressure, point to the necessity of caution in cases where the circulatory system is diseased.

Excessively long duration of the bath seems to produce more or less depression, as shown by the fall of pulse and temperature after fifty-five minutes. It is probable that the time at which this occurs varies with individual idiosyncrasy. In my case it is accompanied by a distinct feeling, which I can only compare to satiety.

The great use of the bath seems to be the power it gives us of producing a free action of the skin in persons of sedentary habit, or suffering from disease interfering with fluid excretion, and by its means I believe considerable elimination of morbid matter may also be brought about. Besides, and along with this, it is an efficient means, if resorted to sufficiently early, of relieving internal congestion, on the same principle and with much greater certainty than the usual diaphoretics : and in rheumatoid affections not only does it act in this way, but by the relaxation of muscles permits of passive movements, rubbing, etc. (shampooing), exercising a much greater influence than they would independently exert.—*Journal of Anatomy and Physiology*.

PORCELAIN PLUG IN A CAVITY.

HARTFORD, Ct., June 12th, 1880.

Editor Johnstons' Dental Miscellany :

DEAR SIR : The idea of inlaying porcelain in cavities on the labial surface of incisors may be new to F. H. Greene, who writes the letter in your *June* number, claiming its invention; but the following extract from the records of the Connecticut State Dental Society, of a meeting held in New Haven, May 29th, 1872, will show that the operation is *at least* eight years old :

"DR. C. R. BUTLER, of Cleveland, Ohio, spoke of what he called panel work ; that is, inserting a small porcelain block into decayed labial surfaces of superior incisors, instead of filling with gold. * * * * * DR. STEARNS, of New Haven, exhibited a tooth inlaid with bone on its labial surface, which he thought preferable to filling with gold, also one with corner attached."

Should any of your readers know of the operation having been performed at an earlier date, will they kindly send notice to the MISCELLANY ?

Very truly yours,

GEO. L. PARMELE.

NATIONAL DENTAL ASSOCIATION.

The Executive Committees of the National (late Southern) Dental Association; of the American Dental Association; and of the New York State Society, would respectfully announce to the Dentists of the United States that they have made ample provision for the reception and entertainment of all Dentists, whether alone or with their families, who will visit New York at the time of the assembling of the Convention from August 9th to 14th. The following hotels are recommended as being favorably situated for the convenience of the Dentists : Sturtevant House, Broadway, near 29th Street ; Coleman House, Broadway, near 28th Street ; Continental Hotel, cor. Broadway and 20th Street ; Rossmore Hotel, cor. Broadway and 42d Street ; Grand Central Hotel, Broadway and 3d Street. The above hotels will accommodate guests with rooms at the rate of \$1 per night for each person, and \$2.50 for room and board for each person. Parlors have been offered at Sturtevant House, Coleman House and the Continental for the use of the Committees. On and after the morning of August 9th, a Committee will be in attendance at Sturtevant House for the purpose of giving visitors information on all points connected with the Convention.

EXCURSION FARES.—The railroad excursion arrangements by the

lines from the East, West and Northwest are so ample and the rates so low, that it was not necessary to make special arrangements.

From Southern points the excursion rates to New York and return, will be as follows: Norfolk, Va., by steamer, \$14; Charleston, S. C., by steamer, \$25; Augusta, Ga., via. Charleston steamer, \$30; Columbia, S. C., via. Charleston steamer, \$30; Atlanta, Ga., via. Charleston steamer, \$40.35; Macon, Ga., at the rate of 6c. per mile, one way, to Augusta, thence by Charleston. Other railroad rates not yet arranged for will be reported through the Presidents of the several State societies.

There will be several excursions given by the Dentists of New York and vicinity, in which all visiting Dentists are invited to participate with their families, which will, without doubt, add to the pleasure of the meeting.

(Signed,) F. A. LEVY, *General Secretary.*

AMERICAN DENTAL CONVENTION.

The American Dental Convention will hold its next Annual Meeting in the CITY OF NEW YORK, on the 11th day of August, 1880.

The above time and place has been selected in order to meet the wishes of the *Southern Dental Association*, who prefer to meet with us. It is hoped that the profession will embrace this opportunity to meet our Southern brethren, and unite with them in again consolidating in one National Organization.

By order of Committee of American Dental Convention.

J. G. AMBLER, *Chairman.*

AMERICAN DENTAL ASSOCIATION.

The American Dental Association will hold its Twentieth Annual Session, August 3d, 4th, 5th and 6th, 1880, at the Hall of the Massachusetts Institute of Technology, Boston, Mass.

Hotel accommodations have been provided at the *Brunswick*, Boylston, cor. of Clarendon Street, opposite the Institute. Rates, \$3 per day, reduced from \$4.50. This hotel is new and first-class in every appointment. The hotel and hall are in near proximity to the business part of the city, yet free from the noise and turmoil necessarily incident to the business streets.

The Committee of Arrangements feel sure they will be able to provide

opportunities to make the stay of the members pleasant and the meetings of the Association profitable.

THOS. FILLEBROWN,
Chairman 1st Div. Ex. Com.

PENNSYLVANIA STATE DENTAL SOCIETY.

WILLIAMSPORT, June 12th, 1880.

The Twelfth Annual Meeting of the Pennsylvania State Dental Society will be held at Bellefonte, on Tuesday, July 27th, and continue three days. The hotel rates to those in attendance will be reduced to \$1.50 per day for first-class accommodations. The place is noted for its "picturesque locality and health-giving atmosphere, and takes its name from a magnificent spring which supplies it with water."

For orders for excursion tickets, or other information, apply early.

All *Dentists* are invited.

G. KLUMP, *Cor. Sec'y,*
Williamsport, Penn.

NEW JERSEY STATE DENTAL SOCIETY.

The Tenth Annual Session of the New Jersey State Dental Society will be held at Long Branch on July 21st and two following days, and not on the 20th, 21st and 22d, as previously stated.

NOTES.

North Carolina State Dental Association.

The North Carolina State Dental Association convened its Sixth Annual Session in the City of Raleigh, Tuesday, June 1st, 1880.

After a very harmonious and interesting meeting of three days—during which many valuable and well-digested essays and papers were read, and able discussions pertaining to practice in its various branches—it adjourned, to meet in Asheville, N. C., on the third Tuesday in July, 1881.

Our friend, Mr. J. W. Selby, of Johnston Brothers, Dental Depot, New York, was

with us, and a vote of thanks was tendered him "for his fine exhibit of material and appliances which are necessary to the successful practice of dentistry; and we would respectfully recommend his Cone Journal Hand-Piece No. 2."

The following gentlemen were elected officers for the ensuing year: Dr. Isaiah Simpson, President; Dr. J. F. Griffith, First Vice-President; Dr. J. D. Clark, Second Vice-President; Dr. W. H. Hoffman, Secretary; Dr. J. H. Crawford, Treasurer.

ISAIAH SIMPSON, *President.*

W. H. HOFFMAN, *Secretary.*

Dental Hospitals in England.

There is no country in the world with richer and better administered charities than England, but it seems to lag behind the age in its inauguration and support of dental hospitals or infirmaries. In every town of importance there is to be found an ordinary hospital, generally supported by voluntary subscriptions, or perhaps more or less heavily endowed. To this rendezvous of the sick poor some persons pleading poverty go to get relief for toothache. The house surgeon is always at least an amateur dentist, and his forceps are often requisitioned in settling a refractory molar, which may be capable of excellent service, but which really needs a dentist to operate on it to preserve it to the patient. In comparatively few towns are there to be found institutions erected and supported for the practice of dentistry, where the suffering poor can go and have their teeth properly treated, instead of being ruthlessly sacrificed to the ignorance of a youthful doctor of medicine. We are pleased to find that a dental hospital has been recently founded in Exeter. This old cathedral city has a large population, and it has on many occasions shown itself to be abreast of its neighbors in public spirit. The institution appears to be in good hands; it has secured the patronage and public aid of the Bishop of Exeter, as well as the Mayor, and it is to be hoped it may be copied by towns in more thickly populated districts of the country.

EMPORIA, Kansas, May 26th, 1880.

The ninth annual meeting of the Kansas State Dental Association was held at Emporia, Kansas, on the first Tuesday in May, 1880. The following officers were elected for the ensuing year:

President—Dr. W. H. Shulze, Atchison, Kansas; First Vice-President—Dr. A. H. Thompson, Topeka, Kansas; Second Vice-President—Dr. S. P. Huntington, Eureka, Kansas; Secretary—Dr. J. A. Young,

Emporia, Kansas; Treasurer—Dr. J. D. Patterson, Lawrence, Kansas; Delegate to the American Dental Association—Dr. A. H. Thompson, Topeka, Kansas.

Adjourned to meet at Topeka on the first Tuesday in May, 1881.

DR. J. A. YOUNG, *Secretary.*

Obituary Resolution—Dr. S. S. White.

The following has been handed to us for publication:

Whereas, The sad tidings of the death of our professional brother and confidant, Samuel S. White, D.D.S., has come to us from a foreign land, whither he had gone in the fond hope of restoring his failing health; therefore be it *Resolved*, That the Dental Society of the State of New York desire to place upon record our high estimate of the character and qualifications of our much-loved friend and brother, being fully convinced that our profession has sustained a great loss. No one has done more to advance its best interests than Samuel S. White; none is more deserving of our esteem and gratitude. He has left a record of which our profession may well feel proud. *Resolved*, That our sympathies, sincere and heart-felt, be tendered to the family and friends of the departed in this their deep affliction, commanding them to that God who has taught us in His holy word that He does not willingly afflict or grieve the children of men, beseeching Him to look with pity upon the sorrows of these His servants upon whom His hand is now so sorely laid, and give them grace to say: “Thy will, O God, be done.” *Resolved*, That these sentiments be entered upon the minutes of this Society, published in the dental journals, and a copy be sent to the family of the deceased.

J. G. AMBLER,
W. M. H. ATKINSON, } Committee.
L. S. STRAW,

CALL FOR A MASS CONVENTION OF THE DENTISTS OF THE UNITED STATES TO ORGANIZE A NATIONAL DENTAL ASSOCIATION.

At their annual meetings in 1879, the Southern Dental Association and the American Dental Convention each appointed a committee invested with full power to adopt measures for the formation of a National Dental Association. The American Dental Association at its meeting in the same year appointed a committee to confer with these two committees on this movement, and report to the Association at its meeting in Boston, August 3d, 1880. Members of these committees met at Saratoga in August, 1879, and elected Professor J. Taft General Chairman.

The committees are as follows:

SOUTHERN DENTAL ASSOCIATION.		AMERICAN DENTAL CONVENTION.	
R. F. Hunt, Ch'man,	Washington, D. C.	R. B. Winder, Ch'man,	Baltimore, Md.
T. T. Moore,	Columbia, S. C.	J. G. Ambler,	New York, N. Y.
S. J. Cobb,	Nashville, Tenn.	F. A. Levy,	Orange, N. J.
T. S. Waters,	Baltimore, Md.	J. Taft,	Cincinnati, O.
J. R. Walker,	New Orleans, La.	F. G. Clark,	Saratoga, N. Y.
F. J. S. Gorgas,	Baltimore, Md.	C. S. Hurlbert,	Springfield, Mass.

AMERICAN DENTAL ASSOCIATION.

A. W. Harlan, Chairman,	Chicago, Ill.
C. N. Peirce,	Philadelphia, Pa.
F. H. Rehwinkel,	Chillicothe, O.
H. J. McKellops,	St. Louis, Mo.

A meeting of chairmen was held in New York, May 11th, 1880, at which were present Professor R. B. Winder, Dr. R. Finley Hunt, and Professor C. N. Peirce, the latter representing (by proxy) Professor J. Taft, General Chairman. Professor Peirce was also present as a member of the committee of the American Dental Association.

This meeting, in accordance with the powers and duties intrusted to the committees, decided to call a Mass Convention, and fixed the time and place of meeting, Wednesday, August 11th, 1880, at 11 o'clock, A. M., in the City of New York, for the purpose of organizing a National Dental Association, to be composed of members of every State society in the country.

A Constitution and all necessary regulations will be prepared by a sub-committee, and submitted for revision to a meeting of the full committees, to be held in the same city at 9 o'clock, A. M., on Monday, August 9th, 1880, at the Sturtevant House, so as to be thoroughly prepared for the action of the Mass Convention.

The importance of this measure requires that the whole time of the Convention shall be devoted to the business of organization.

All members of State societies and associations, and those intending to become members, are cordially invited to be present at this Mass Convention and take part in its proceedings.

As this proposed National Association is intended to promote the best interests of the whole profession of the country, it is important and is especially urged that every State in the Union be represented by as large a number of Dentists as possible.

It is hoped, therefore, that *every* Dentist in the country who can *possibly* go to New York at that time will be present.

The following Executive Committees have been appointed to act together and make all arrangements for this meeting, such as procuring a hall, hotel accommodations, reduction of railroad fares, etc.

BY AMERICAN DENTAL CONVENTION.

J. G. Ambler,	New York N. Y.
Charles Merritt,	New York, N. Y.
H. Townsend,	Philadelphia, Pa.
J. H. Smith,	New Haven, Conn.
E. D. Fuller,	Peekskill, N. Y.
G. A. Mills,	Brooklyn, N. Y.

BY SOUTHERN DENTAL ASSOCIATION.

W. H. Atkinson,	New York, N. Y.
S. J. Cobb,	Nashville, Tenn.
J. W. Selby,	New York, N. Y.

BY NEW YORK STATE DENTAL SOCIETY TO CO-OPERATE WITH OTHER COMMITTEES.

O. E. Hill, Brooklyn, N. Y.	L. S. Straw, Newburgh, N. Y.
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J. TAFT, General Chairman.

R. B. WINDER, Chairman Com. of A. D. C.

R. FINLEY HUNT, Chairman Com. So Dental Ass'n.

A. W. HARLAN, Chairman of A. D. A.

FRED. A. LEVY, Gen'l Sec'y, Orange, N. J.

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*August, 1880.*—No. 80.

DENTAL CONVENTIONS—“ABOUT THIS TIME LOOK OUT FOR DENTAL CONVENTIONS.”

We wish that we could have the “ear” of every dentist in the United States for a few moments whilst we talk about these meetings.

There is no impropriety in gentlemen of æsthetic tastes, and having superior educational, social and financial advantages, forming among themselves Dentological Societies, into which only those of like attainments may enter. Indeed, such associations are vital to the cause of advanced research, and long, patient investigation and experiment in things “unattempted yet.” These begin where others have left off, and having thorough knowledge of what has been done, waste no time in “vain and useless repetition.”

They hold the same relation to dentistry that those hold to astronomy whose only search is after the “unknown,” and the masses of the profession look up to them without envy. Their utterances obtain a large hearing, and they guide the thoughts and aspirations of younger men.

But, after all, the strength of an army is not in its skirmish lines. The true advance must be with the masses, and here, we think, is the weak point at present with dental societies. So far as our knowledge extends, there is a large proportion of dentists who are admitted to be worthy and respectable gentlemen, who from some reason seem to hold aloof from the State Dental Associations.

We think that this is the primary evil to be remedied. We want to see all dentists in good standing join their State Societies. In order

to secure this result, the fees should be low, the place of meeting central, the time convenient, and lastly, the few who are socially and professionally in advance, should meet the many who are not so fortunate with delicate attention and gentle courtesy. Their inquiries or suggestions that perhaps show a lack of knowledge of facts that should be patent to all, ought to meet no surprised stare or covert sneer, but, on the contrary, they should never know from any word or look that they have exhibited any want of education in the rudiments of dentistry. Nor will they be so treated by any true gentleman or genuine searcher after knowledge. It is only pretenders and *parvenus* who so offend against good breeding and true professional etiquette.

We are led to these reflections by reading the circular of the proposed National Dental Association that is called to meet in New York this month. It seems to be the aim of those who have originated this movement, to organize a purely representative body, and one that whilst deriving its life and powers from State Societies alone, shall be parental in its character, and give back to the various sections by its presence and encouragement all that it receives, and with interest added. To make this body a power for good in dentistry it must represent the great body of dentists in the several States or sections, and not a few dentists therefrom. When it is the case that only a small proportion of dentists in each State are members of State Societies, the fault is not with the few who attend, but with the many who stay away. Those who have the interests of the profession at heart would hail with great pleasure any influence that would induce dentists all over the Union to enter and actively support State Societies. We have done what we could to bring about this end, and hope that some more powerful voice may be enlisted in the cause. We are glad to see that the inaugural meeting is to be held in New York, and that the profession here is disposed to unite in giving the dentists from other parts of the country a hearty welcome. We are firm believers in the potency of numbers, and hope that this may be the largest gathering of dentists ever held. Every State in the Union should be represented, and we believe that the plan of the Committee on Organization contemplates making it obligatory to hold annual meetings consecutively in five different sections of the country, the selection of the officers to be made from the section in which the meeting is to be held.

The divisions suggested are :

- 1st. New York and New England States.
- 2d. Pennsylvania, New Jersey, and South to Maryland, and West to include Ohio and West Virginia.

3d. Virginia, and Southern States to Texas.

4th. North-western States.

5th. California and Pacific Slope.

As the plan is to hold the meetings in each section in rotation, these divisions would in five years carry the Society, with its influence, into every section of the United States. A glance at the map of the country will show that this desirable object is easily accomplished by this arrangement of the several divisions. There are two reasons favoring this movement: First—it could not in any way interfere with present local or State organizations. Second—it would secure division of officers and influence all over the country, and forbid its quiet settling down into the hands of a few men—even though they be earnest men.

In closing this article, we would offer our services in any way that can contribute to the comfort and convenience of visiting dentists.

We are gratified that the movement has its beginning at New York.

DENTAL STATUS OF THE DOMINION OF CANADA,

AN ESSAY BY DR. GEO. W. LOVEJOY, OF MONTREAL, P. Q., BEFORE THE
CONNECTICUT VALLEY DENTAL SOCIETY.

Having been asked to write a paper on the above subject, and thinking it would be of interest to you to know where and how they legislate for the profession of dentistry in the Dominion of Canada, I have undertaken to give a brief summary so far as lies in my power, and will endeavor to give you only such assertions as are supported by public documents. It may be proper here to remark, that the Dominion of Canada consists of the Provinces of Ontario and Quebec—formerly Upper and Lower Canada—Nova Scotia, New Brunswick, Manitoba, British Columbia and Prince Edward's Island. Provision is made in the Act of Confederation, which came into operation on the 1st of July, 1867, for the admission of Newfoundland. The Act orders that the constitution of the Dominion shall be "similar in principle to that of the United Kingdom;" that the executive authority shall be vested in the sovereign of Great Britain and Ireland, and carried on in her name by a Governor-General and Privy Council; and that the legislative power shall be exercised by a Parliament of two Houses, called "the Senate" and the House of Commons. The members of the Senate are nominated for life by summons of the Governor-General under the great seal of Canada.

By the terms of the constitution there are seventy-eight senators, and the House of Commons is elected by the people for five years, at the rate of one representative for every 17,000 souls. At present there are 206 members. In two of the above Provinces they legislate for dentistry—Ontario and Quebec. In Ontario the Board of Examiners is called the Royal College of Dental Surgeons of Ontario; and in Quebec, the Board of Trustees and Examiners of the Dental Association of the Province of Quebec. In the other Provinces any person can practice dentistry.

In Ontario Section 14 of the Act reads as follows: "All persons being British subjects by birth or naturalization, who were engaged on the fourth day of March, 1868, in the practice of the profession of dentistry, or who, not having been residents of Ontario, have had three years' experience in the practice of dentistry, shall be entitled to the certificate of the Licentiate of Dental Surgery, upon their furnishing to the said Board satisfactory proof of their having been so engaged, and upon passing the required examination, and upon payment of the fees authorized and fixed by the said Board (for the payment of which the Treasurer's receipt shall be sufficient evidence), and persons being British subjects by birth or naturalization, who were constantly engaged for five years and upwards in established office practice, next preceding the said fourth day of March, one thousand eight hundred and sixty-eight, in the practice of the profession of dentistry in the Province of Ontario, shall, upon such proof as aforesaid, and upon payment of such fees as aforesaid,* be entitled to such certificate without passing any examination."

In Quebec the Act assented to January 24th, 1874, Section 11, reads as follows: "All persons who have been constantly engaged in the practice of the dental profession in the Province of Quebec for a period of three years and upwards, next preceding the passing of this Act, in an established office of dentists, shall be entitled to a certificate of Licentiate of Dental Surgery, upon furnishing to the said Board satisfactory proof of their having been so engaged, and upon payment of the fees; and all persons who have not been constantly engaged for a period of three years, as hereinbefore provided, shall, upon passing the required examination and upon payment of the fees as aforesaid,† be entitled to a certificate of Licentiate of Dental Surgery in this Province."

In the announcement of the Royal College of Dental Surgeons of Ontario, for 1878 and 1879, it says: "During the past year the Dental

* The fee is \$40.

† The fee is \$60.

Acts have been consolidated by order of the legislature, and are now published with the By-Laws, that the whole law as relating to the profession of dentistry may be in your hands. You will, therefore, kindly preserve this copy for reference." And on page 7 it says : "With a view to the removal of every reasonable cause of annoyance on the part of our American friends, the following extract from the minute book of the Board of Directors is published : ' *Whereas*, In the opinion of the Board, it is not expedient to make invidious distinctions on account of citizenship ; and *Whereas*, We are advised by our solicitor that we are not debarred by statute from making provision for admitting other than British subjects ; therefore, *Resolved*, That persons not British subjects and not residents of Ontario shall be admitted to examination for license to practice dentistry in Ontario on conditions as nearly as possible equivalent to those required of our own students and other British subjects—which conditions shall be as follows, viz.: Payment of the prescribed fee, and (1) Compliance with all the requirements of Section 3 of By-Law No. 7 ; or (2), Having been engaged in the study of dentistry for not less than three years, and having proceeded to graduation in some regularly chartered Dental College ; or (3), Having had three years' experience in the practice of dentistry, exclusive of two years' pupilage.' "

It is strange that after an Act has been in existence for over ten years and then revised, that within a few weeks it is thought advisable to introduce a by-law which will enable one to drive a coach-and-four through Section 14. How much better it would have been, as in Quebec, to have left out the words "British subject" altogether. Of course no one doubts the liberty of the Province of Ontario to make her own laws, and no one doubts the propriety of those across the imaginary boundary line in the United States knowing the said law. No one can lawfully practice dentistry without a license, and no license is granted without examination in either Ontario or Quebec, and yet, previous to 1872, nineteen applicants from England, on payment of the fee, received the certificate of Licentiate of Dental Surgery from the Royal College of Dental Surgeons of Ontario, as per extract from a letter from the Secretary of the R. C. D. S., Ontario, to the Registrar of the General Medical Council, London, England. It is as follows : " When our Dental Act was first passed, the latter clause of Section 14 did not contain the limiting words ' in the Province of Ontario.' * * * The clause being general in its character and apparently open to British subjects wherever resident, Dr. Waite, of Liver-

pool, England, applied for license early in 1869. This application being referred to our solicitor, the Board was advised that if Dr. Waite had complied with all the requirements of the Section there was nothing to prevent them granting him license, which would of course entitle him to all the privileges of the Act, were he to take up his residence in Ontario. The license was accordingly issued. During 1870 and 1871 eighteen other applications were received from England, nearly, if not all, coming under the cognizance of Dr. Waite, on whose advice the Board acted, and in each case license was granted."

In the announcement of the Royal College of Dental Surgeons of Ontario for 1879 and 1880, the seven members of the Board of Trustees and Examiners of the Dental Association of the Province of Quebec are placed among the Clinical Instructors, only one of whom, holding the Honorary Certificate of Licentiate from the R. C. of D. S. of Ontario, could legally perform any act of dentistry for hire, gain or hope of reward. As a matter of course, it follows that the Board of Trustees and Examiners of the Dental Association of the Province of Quebec cannot be dictated to by the Royal College of Dental Surgeons of Ontario, notwithstanding their seven names are placed as Clinical Instructors.

An erroneous impression has got abroad from a letter published in the proceedings of the General Medical Council in regard to the registration of dentists, London, England, 1879, and signed by W. G. Beers, Secretary D. A. P. Quebec. It purported to come from the Board of Trustees and Examiners. It states: "We are now petitioning Parliament for power to compel students to attend the College in Toronto, etc." I would state that I am informed by members of the Board that no such bill has ever been presented, or ever will be. He also writes, after his signature: "I might say that in Canada we do not recognize American Degrees." Also: "I founded at the time the *Canada Journal of Dental Science*, and have ever since owned and edited it, the only dental journal in Canada." There have been four numbers issued in eight years.

Why is this movement made to compel students to attend the College in Toronto in preference to any Dental College in the United States? Has any member of the Quebec Board, but the one who is an Honorary Licentiate, ever visited the College at Toronto, or do any of the other six ever intend to visit the same, notwithstanding the fact of their being placed on the list of Clinical Instructors? I trow not. General opinion is in favor of United States Dental Colleges, and while not wish-

ing to disparage any attempt to elevate the profession of dentistry in Canada, yet I do most decidedly object to any attempt at coercion as to what college I shall send my students. Of course, it is only an attempt, and it is only because this report from England, containing what purports to be an official letter, has been published, that it becomes my duty as an American citizen, practicing in Montreal, in the Province of Quebec, to state the facts and correct erroneous impressions, as by that letter any one would infer that we had a dental journal, a Quebec Dental Society, and a Montreal Dental Society. Have we? Since my residence in Montreal, for over eight years, I have never attended a meeting, nor do I know of any having been held in eight years; I only know of one Dental Society in Canada—the Ontario Dental Society—which meets on the third Tuesday in September. In the eyes of the Boards American Degrees are not recognized in Canada, although in the announcement of the Royal College of Dental Surgeons of Ontario nineteen Licentiates are reported as doctors of dental surgery from the United States Dental Colleges, and in the Province of Quebec several are graduates of United States Dental Colleges, and several more have matriculated. How many from Quebec have attended the Toronto School? One student attended one course, and he is now in New York City.

While not wishing to disparage any attempt to elevate the profession of dentistry in the Provinces of Ontario or Quebec, but on the contrary I would hail with delight the same, I must say that the United States are looked to by the world over as the pioneers in dentistry, and American Degrees, though not officially recognized in the above Provinces, are eagerly sought after. Still, however, there are some in the Province of Quebec who have ever been ready to advance the interests of the profession and to whom much credit is due. I cannot refrain from mentioning Dr. Charles Brewster, who discovered the powerful hæmastatic, Lycoperdon, the application of which arrests the most obstinate hemorrhage after extraction. I hope, at no distant day, that the Province of Ontario will see that although they may place the entire Examining Board of the Province of Quebec in their announcement as Clinical Instructors, the Board will not allow itself to be dictated to in regard to sending students to their college.

CORRECTION.—At the end of the "Call for a mass meeting of Dentists to be held in New York, August 11th, for the purpose of forming a National Association," the name of A. W. Harlan, Chairman of Committee A. D. A., was used by mistake. FRED. A. LEVY, *Gen'l Secretary.*

MEETING OF THE FIRST DISTRICT DENTAL SOCIETY,
HELD AT THE RESIDENCE OF DR. J. F. P. HODSON,
No. 11 WEST 39TH STREET, NEW YORK, JUNE 1ST, 1880.

The meeting was called to order by the President, and the minutes of the previous meeting having been read by the Secretary, were approved.

Dr. BOEDECKER, on behalf of the Committee on Clinics, reported that they had had the most feeble clinic of the session. There were only thirty-five dentists present, though they represented a good many towns and districts of the State. There were only two operators, Drs. C. C. Carroll and G. F. Reese.

Dr. CARROLL filled the left upper lateral with No. 4 Globe gold, rolled in a napkin, and finished with 120 Globe foil. He used a heavy lead mallet and Varney points. The patient was a dentist, and he said afterward that the mallet was a great deal too heavy, and was very annoying to him. On examination, the tooth was found to have two small cracks in the enamel. In every other way the filling was beautifully done.

Dr. G. F. REESE then exhibited his gold alloy cast dental plate and invested an upper set in plaster. The method in which this is invested is the following: The model is prepared in almost the same way as for a rubber case. The wax which forms the base is composed of two very thin pieces or sheets of wax, called flour wax. These two sheets are laid over a model and upon these the teeth are arranged, and on the end of the model the plate is slightly strengthened so as to make a ridge there. On both ends of the heel he inserted two round pieces of wax, as well as in the middle. Then he put the model into a small flask, using more care than in rubber work that everything is perfectly smooth, because every little bit that is imperfect there will show in the set. After it has been put into this little flask and is perfectly hard, it is taken out and separated and all the wax is poured out. Then it leaves on the heel of this piece, which is covered in the flask, three holes. One, the middle one, is designed for pouring the metal in, and in the others he inserted two little trumpets made of wax. They are stuck in tight and their tops are sealed up with wax. Then this plaster, with the trumpets inserted, goes again into a larger flask, but these trumpets are gathered up tight, and Dr. Reese claims that in sealing them up the plate will not be roughened. Then, in the middle, is another trumpet. After it is put into the flask and dried in a drying stove, which takes about twelve

hours, or more, the test of its being dry is to take a piece of glass and hold it over the middle hole and see if there is any moisture. The metal is then put into a ladle and poured in, and after it is cooled it makes a beautiful smooth plate.

Dr. MILLS inquired as to the state of the tooth said to have been cracked in the process of filling by Dr. Carroll. He did not think it was fair that so serious a charge should be made against a professional man without proof.

Dr. BOEDECKER remarked that there were three or four dentists at the clinic who saw the tooth cracked. For his part, he regarded the tooth as good as though it were not cracked. The cracks were not at all of a serious nature, but he felt it his duty to mention the case.

Dr. J. M. HOWE considered that if the tooth was, as Dr. Boedecker said, injured so slightly, it was severe and out of place for the Clinic Committee to make it part of their report.

Dr. A. L. NORTHRUP was glad to have a report which was honest and square, and he thought the Committee were to be congratulated on being so straightforward.

Dr. HOWE contended that if Dr. Mills had not taken the matter up, the impression would have gone abroad that the tooth was ruined.

Dr. W. H. ATKINSON asked what was the object of the Clinic Committee, if not to bring out the sharp criticisms of those who witnessed it? He thought they should rejoice, rather than fling unkind sentiments at each other, that they had lived to see the day when they could meet together and talk on their work. They all derived benefit even from the blunders they made. Some gentlemen were inclined to find fault with the mallet, but he thought that if they would use it more intelligently they would love it better and leave better marks behind them. It was well that this matter should have been introduced and ventilated, and he thought that being introduced as it was by so competent a judge as the Chairman of the Clinic Committee, they might place every confidence in the report.

After some remarks from other gentlemen, Dr. Boedecker said he examined the tooth before the operation and saw that there was one small crack near the cutting edge, but the upper crack was not present before the gold was introduced.

After electing fourteen delegates to represent the Society at the forthcoming meeting of the American Dental Association at Boston, the meeting adjourned till October.

SECOND DISTRICT DENTAL SOCIETY.

QUARTERLY MEETING, HELD AT THE MAYOR'S OFFICE, NEWBURGH, N. Y.,
JULY 8TH, 1880.

The chair was taken by the President, Dr. W. S. Elliott, of Goshen. There were also present, Drs. C. F. Allan, Newburgh; A. H. Brockway, Brooklyn; R. C. Brewster, Brooklyn; W. A. Campbell, Brooklyn; T. W. Du Bois, Poughkeepsie; M. E. Elmendorf, Brooklyn; E. D. Fuller, Peekskill; O. E. Hill, Brooklyn; J. J. Pitts, Brooklyn; R. G. Stansborough, Newburgh; J. H. Race, Brooklyn; L. S. Straw, Newburgh; M. L. Thompson, Brooklyn.

The minutes of the last meeting were read by the Secretary and approved.

The report of the Censors, recommending that Dr. R. G. Stansborough be elected a member of the Society, was adopted.

THE PRESIDENT'S INAUGURAL ADDRESS.

The President delivered an address on "Bio-Genesis, or the Beginning of Life," which we hope to give in full in our next issue.

THE COMPOSITION OF AMALGAMS.

Dr. O. E. HILL, Brooklyn, proposed that a committee of three be appointed by the President to investigate the composition of all the following amalgams: Kearsing's, the Boston, the Standard, Oliver's, Fletcher's, Sterling's and Lawrence's; such committee having power to draw a draft on the Treasurer for any amount less than \$100 to defray the cost of such investigation, and to report at the next meeting of the Society. He (Dr. Hill) said that he thought it was very desirable that they should know of what the amalgams they used were composed. It was said by different persons that some of the amalgams named in his resolution contained cadmium, while the manufacturers said they did not. As they had some money belonging to the Society, he thought it was only right that they should use it for the good of the members and the dental public.

Dr. L. S. STRAW, Newburgh, seconded. He thought they might leave the matter with confidence in the hands of any three of their members, and they would not run the Society foolishly into debt.

Dr. A. H. BROCKWAY, Brooklyn, did not know that there was any necessity for them to have the information which Dr. Hill desired, but,

even admitting the necessity, he thought they could find that they had the work done ready to their hands. Dr. Flagg had made analyses of just all the amalgams in use, and there was no doubt that those analyses could be got from him if they desired it. If so, he did not see the necessity of having the work done *de novo* by another chemist. If even they found out as a matter of fact that there was cadmium in different amalgams, what would they do then?

Dr. HILL: Not use them.

Dr. BROCKWAY: But then it is said by some that a small percentage of cadmium is good.

Dr. HILL: If we hear that in a certain amalgam there is, say, two per cent. of cadmium, we shall find out by actual experience if that amount is injurious or not.

Dr. STRAW remarked that he had in time past fought as much against amalgam as he was able, and yet now he used more of it than anything else. But he could not say which was the best. He would willingly give ten dollars to know of what the prominent amalgams in the market were composed.

The resolution was put to the meeting and carried unanimously.

The Chairman appointed Drs. Allan, Fuller and Hill to act as a committee to make the necessary investigations.

OFFICE PRACTICE—GUTTA PERCHA STOPPING.

Dr. BROCKWAY said that a few days ago a lady came to him, and in making an examination of her teeth, he found a gutta percha stopping on the buccal surface of an upper molar in good preservation, having been put in eight or nine years ago. On the previous day he had another lady in, and he found that a gutta percha stopping put in an incisor tooth nearly four years ago, although somewhat discolored and the surfaces slightly worn, was in a good state of preservation, and had preserved the tooth as well as it was possible. He believed that if dentists would use gutta percha stopping more frequently, especially in young subjects, they could save themselves some little mortification and their patients a great deal of expense.

Dr. STRAW felt that he could corroborate the remarks of Dr. Brockway. He did not believe in using amalgam for little folks; and, for grown-up persons, where the teeth were poorly calcified, he would put gutta percha stopping in, and allow it to stop six months, or six years, if it would. It often happened, however, that a dentist filled a tooth with gutta percha stopping; the patient would go away and some time after go

to another dentist. The other dentist would remove the stopping, and tell the patient of the "miserable stuff" that had been put in the tooth, and would go straightway and fill the tooth with gold. By and by the patient would lose the tooth, whereas if he had had the gutta percha replaced by a fresh lot he would have preserved it, and carried it to the grave with him.

Dr. E. D. FULLER, Peekskill, said that a few weeks ago he had occasion to examine the teeth of a lady who had some of them filled thirty years ago with gold by Dr. Allan, of Norwich, Conn. He discovered that she had one bicuspid that was filled with gutta percha stopping more than nineteen years before, and now it was nearly as perfect as when first put in, and the tooth had been perfectly preserved. That was an endorsement of gutta percha stopping. About three years ago a lady came to him with three molar teeth badly decayed. He told her that he did not think he could fill them satisfactorily with gold (as she desired), but recommended gutta percha, saying that when it came out it could be renewed. Whether or not she distrusted his ability to do the work he did not know, but she went to New York, and a dentist there filled the teeth with gold, charging \$75 for the three. Two years afterward she came to him (Dr. Fuller) and asked him to examine these three teeth. He did so, and found that one was entirely broken away down to the gum, and the fillings in the other two were not worth to the patient the weight of the gold that was in them. He filled them with gutta percha, and now he occasionally renewed it, and the two teeth were preserved to her by that means. Gutta percha was very valuable where amalgam would be objectionable on account of appearance, also in the cases of children and sensitive teeth of adult persons. He did not believe it was possible to do justice to children's teeth in filling them with gold, because of the restlessness of the patients, and the inability of the operator to keep the cavity dry during the operation. He thought that the time was coming when they would use more gutta percha, and with better satisfaction than in the past.

Dr. HILL maintained that there was the same difficulty with gutta percha stopping as with amalgams. The great question they wanted to get at was, which was the best to use.

Dr. BROCKWAY, reverting to the question of amalgams, said that he had tried nearly every kind that had been offered him, and now he had settled down to about three kinds. When he had a cavity in a difficult position, and where the appearance was not of much importance, he used Sullivan's. It was used extensively in Europe, but not much in

America. After teeth were filled with it, it turned to a dirty black. He had never yet had to remove one of these stoppings.

A CASE OF INFLAMMATION.

Dr. STRAW said that a boy came to him to have a lower *sapientia* tooth extracted. Inflammation followed the extraction, and his jaws remained stiff, and he had some little pain. How were his jaws to be got open?

Dr. FULLER: Give him sufficient antimony to nauseate him, and use a warm poultice to his face to relax the muscles.

AN EXTRAORDINARY CASE.

Dr. FULLER said he should like to narrate an incident that came under his notice some time back, as illustrating the necessity which existed for doctors of medicine knowing more about diseases of the mouth than many of them did. Some appeared to be almost wholly ignorant of the sympathetic diseases which grew out of a diseased state of the mucous membrane of the mouth. The case he would allude to was one in which a clever physician had a lady under his care, and he said that she was suffering from pulmonary phthisis. He attended her for nearly a year, and eventually said that no human power could save her, and that she must die. She made up her mind that she was about to die, for she was confined to her bed, was thoroughly prostrate, and unable to sit up. A gentleman who was a friend of this lady, who had read a good deal on the subjects of anatomy, physiology and phrenology, came to him (Dr. Fuller) and said he did not think this lady was really suffering from consumption at all, and that the diagnosis of her physician was altogether wrong. He believed that the state of her mouth was the primary cause of all the trouble. At the request of this gentleman he (Dr. Fuller) went in and saw her. She said that she did not want to have anything to do with a dentist, as her time was short on earth, and she thought she would have some unnecessary suffering if a dentist had anything to do with her. After two or three days he requested the nurse to read to the patient the accounts of two or three almost parallel cases given in "Bond's Dental Medicine," a work published by Professor Bond, of Baltimore. These accounts carried some conviction to the lady's mind, and he (Dr. Fuller) went to see her subsequently. He found her bolstered up in bed; she had a bad cough, and expectorated a good deal. He immediately came to the conclusion that it was a case of chronic gastritis, but not pulmonary consumption. He found that her upper

teeth were all gone, and she had about ten in the lower jaw which were so far diseased that they could have been pulled out with the finger. On pressing the gums pus came out in large drops. This pus going with her food had brought on the complaint from which she was suffering. He told her that it was possible tubercles might have formed, and that he could not save her life, but it would do no harm to have her teeth taken out. He extracted the teeth, prescribed the only thing that could be got in the place (it being in the country)—white oak bark made into an infusion. The result was that she began to improve immediately. This was in December or January. The next summer she procured a set of teeth, and shortly after got married, and is now as well as anybody. He was glad to see that the young men who were entering the dental profession had advantages which he had not in his youth. At the same time while doctors of medicine should receive a dental education, it was equally necessary that dentists should receive a medical education. Cases were continually coming under the attention of each of them which showed the necessity of a dentist having something more than a thorough knowledge of the mouth.

The meeting then adjourned.

19th ANNUAL SESSION

OF THE

AMERICAN DENTAL ASSOCIATION.

3d DAY, EVENING SESSION.—(CONCLUDED).

Dr. EDWARD OSMUND: I have had considerable experience in administering nitrous oxide. Years ago I used to give a great deal of it, but of late years have withheld it in a great many cases where formerly I should have administered it. The immediate effects of its inhalation are not all we have to consider—the trouble lies in its after effects. I have heard of many cases of headache, paralysis, and sometimes even insanity following its use. The fair sex are particularly liable to suffer from its administration. There is a time (during the catamenial flow, and for a week previous) when it should not be given them under any circumstances, no matter how positively they may demand it. I follow this rule in my practice, and find my lady patients appreciate the motives

which actuate me in this respect. Neither should it be administered to them at the change of life. The reason of the injurious effects of nitrous oxide at such time, is found in the increased tension of the blood vessels, and the peculiar condition of the uterous organs, etc. During the very hot weather, when people are liable to sunstroke, congestion of the brain, and like difficulties, I make it a practice never to use the gas. I merely state these few general principles to warn you of some of the dangers connected with the use of nitrous oxide.

Dr. C. N. PIERCE: I wish to commend Dr. Warner's paper, because of the lesson of caution it extends to us in the use of nitrous oxide. Many of those who administer it state that it is perfectly harmless, and their patients are told it can be taken without injury. Now, is not it the experience of us all that such is not the case? I have met in my experience with subjects who have suffered, and are suffering still, from the administration of gas; one of them, a physician who had never seen a sick day, took gas, lost forty pounds in weight, was a constant sufferer from diabetes, and has never seen a well day since. Another case was that of a gentleman who took the gas for the extraction of two teeth; he went to his room, was attacked with diabetes, and after suffering constantly for a year and a half, died. I have had a number of lady patients who have taken it, and for six or eight months after have complained of debility. These may be only exceptional instances, but they lead us to be careful how we recommend it as being perfectly harmless.

Dr. W. H. ATKINSON: Mr. President, Dr. Warner is the only gentleman who has spoken who has really taken hold of this thing in a scientific manner. Blood tension has been spoken of. How many in this room understand what blood-tension is; how it is excited and controlled? All anæsthetics are dangerous, and probably the one that is considered most dangerous is the safest one known to dentists—I refer to chloroform. There is no such thing as physiological action between nitrous oxide and the human body. If its action is physiological, then it is compatible with health; if pathological, then, in the name of humanity, say so. Ninety-six per cent. of the oxygen taken into the lungs in breathing is rendered unfit for reception into the blood-column in the capillaries of the air-vesicles, at the same time that four per cent. is taken up by endosmosis. Nitrous oxide is not a supporter of respiration, and cannot contribute to the molecular change necessary to the continuance of systematic life. I would ask any gentleman present, who has listened to the demonstrations presented here, if he has been made strong in his understanding thereby, so that he can administer nitrous

oxide, and know when it is safe, and when it is not safe? Where is the man who can diagnose the apoplectic tendency? point him out and let us question him, that we may obtain the knowledge he possesses.

Dr. WARNER: Narcotism I consider to be a lowering of the tonicity of the neutral current. Blood-tension is a deep subject, and a man who has not studied it thoroughly, both in theory and practice, can hardly tell what it is. I am decidedly opposed to the administration of anæsthesia by the average dentist, for many of them are incompetent to administer nitrous oxide, as they have not the requisite knowledge of its properties and effects. A man who is well posted in its administration will observe that there are three distinct stages in its effects; at the second stage anæsthesia begins, and will last a sufficient time for the performance of short dental operations, such as the extraction of teeth; but if the patient is carried to the third stage, a great mistake is made. Of course it is a very difficult thing to know just who is constitutionally predisposed to paralysis, and to decide when the system is not in a proper condition of oxygen-holding—that is, has very little oxygen in the tissues. It is a very difficult thing to diagnose apoplectic diathesis, where no active symptoms have ever disclosed its presence. I do not think I agree with Dr. Atkinson when he says chloroform is the safest anæsthesia known to dentists. He may be correct, for I do not understand the subject as well as he does, but I consider it the most abominable and dangerous that has ever been used in the healing art, and especially when used by dentists. More persons die from its effects when taken for the extraction of teeth than when taken for capital operations.

Dr. C. W. SPAULDING related the cases of two young ladies which had come under his observation, to whom nitrous oxide had been administered, and from the effects of which neither had ever recovered.

Adjourned.

4th DAY—MORNING SESSION.

The meeting was called to order at the usual hour, President McKellops in the chair.

The newly elected officers were installed, Drs. H. A. Smith and H. W. Morgan escorting the new President, Dr. L. D. Shepard, to the chair. Dr. McKellops, on retiring, briefly returned his thanks for the courtesy with which he had been treated by the members during his incumbency.

Dr. SHEPARD, on taking the chair, returned his thanks for the honor conferred on him by his election to preside over the deliberations of the

Association, which had always stood first in his estimation as a means of advancing the education of dentists.

The Fifth Section, Anatomy, Physiology, Histology, Microscopy, and Etiology, was declared still open.

Dr. W. C. BARRETT expressed his regret at having been unable to perform some physiological experiments before the Section, which he had contemplated, but hoped to be able to do it another year. He thought this could be made an important and interesting feature in the Section.

The Fifth Section was passed, and the Sixth Section, Pathology, Therapeutics and *Materia Medica*, was called, and Dr. F. M. Odell stated that they had no report prepared.

Dr. W. H. ATKINSON: I have a few words to say pertaining to this section, which really grow out of the section of which I am a member, and that is, the difficulty we labor under, from the multiplicity of significations that are given to terms. The special term to which I refer in this case is the one which names this section, "Pathology," and as it follows Section Five, which speaks of "Physiology," the ambiguity becomes apparent. Pathology is derived from the Greek *pathos*, feeling, and *logos*, speaking, discourse. Now that covers the whole ground of what is called physiology, and the ambiguity arising from the use of both will be seen all through our discussions. Just as fast as we can purge our nomenclature of the multiplicity of the words we use, so fast shall we arrive at certainty of expression. I am not discouraged because there is no report from these sections on chemistry and pathology. I did not expect this new plan of working in sections would operate perfectly smoothly at first. Too many are inclined to preserve the accepted (mark you, not proved) methods. We must reconsider the ground upon which we claim scientific standing and professional ability. If, then, this is the situation in which we find ourselves, what shall we do? We must go to work and revise the department of study, and carefully purge the textbooks, and after we have gone through and rejected what was false, or not clearly and unquestionably demonstrated, gather up what is left and see if there is one-half of one per cent., and then go forward to our task, each with the spirit that it is *our* work, and not *my* work. We shall then see eye to eye, and all unpleasantness will have passed forever from amongst us.

The Sixth Session was passed, and on motion of Dr. C. S. Stockton, a vote of thanks to the retiring officers and the local committee was agreed to.

Adjourned.

SEMI-ANNUAL MEETING OF THE CONNECTICUT VALLEY DENTAL SOCIETY.

The Society convened at the Sea View House, Savin Rock, West Haven, Conn., June 17th and 18th, 1880.

The meeting was opened on the first day at 2:15 P. M., President Stockwell in the chair.

Drs. J. H. Smith, R. A. Fones and E. S. Niles were appointed a Committee on Membership.

The Secretary's report was passed, and some miscellaneous business also disposed of.

The Committee on the nomination of delegates to the American Dental Association reported through Dr. J. Beals, of Greenfield, Mass. Dr. C. A. Brackett, Chairman of the Committee, had corresponded with him, and had submitted a list of thirteen names of gentlemen who had agreed to be present at this meeting of the American Dental Association if elected. He moved that they be collectively elected. This motion was carried.

The Committee on Publication reported through the Chairman of the Committee, Dr. Stockwell.

The Committee on "Gardner Case" reported through Dr. E. S. Niles, that Dr. Waters was entirely exonerated from all blame in the death of Mr. Gardner, it being firmly believed that he came by his death from causes absolutely remote from the treatment he received from Dr. Waters' hands.

The Committee on Membership reported favorably upon the names of Drs. E. H. Andrews, of Southington, Conn.; Geo. O. Stearns, of New Haven, Conn.; J. O. Cook, of Waterbury, Conn.; M. C. Hitchcock, of Ansonia, Conn.; A. M. Rice and F. Hindsley, of New Haven, Conn.

THE PRESIDENT'S ADDRESS.

The President then delivered his address, as follows: The seventh article of the programme calls for an opening address by the President. I confess myself somewhat uncertain regarding the significance of this article. I believe it is quite unprecedented in the history of this Society. The annual meeting is, I am sure, quite soon enough for me to presume to occupy any time in extended remark. I apprehend, however, that nothing more is expected of me, on this occasion, than to say a sort of "grace" before you are invited to partake of the bountiful and inviting

feast and "flow of soul" that has been so well provided by our efficient stewards, the Executive Committee. I cannot refrain, in this connection, from congratulating you upon the favorable auspices under which we have assembled to-day; I congratulate you upon the place in which we have been called to meet—a place where we may combine, under favorable circumstances, pleasure with profit—where we may obtain that physical rest and vigor which many of us need. The place and its surroundings are eminently calculated to offer these, and they will serve to give an added zest and stimulus to our appetite for, and appreciation of, the mental viands and professional pabulum that now await us. Meeting, as we do, upon one of the beautiful shores of the "great deep," I have been reminded that it may be regarded as symbolizing the fact that we have, as a society of earnest men, again met upon the shores of the great waters of scientific truth and professional knowledge, for the purpose of making new soundings upon more or less familiar ground, and also, if possible, to cast our lines further out from the shore into the deeper waters that lie outstretched in vast extent before us. I also most heartily congratulate the members of the Connecticut Valley Society that we are favored to-day with the presence of so many noted men from other societies, some of whom we have welcomed before, and all of whom we shall ever be pleased to welcome to our convocations. We are all members of one common profession, and have common interests and objects for which to strive. Let all such feel and make themselves perfectly at home here to-day, and contribute to, as well as partake of, our common table. I also desire to say that I am much gratified to see so many of the profession present who are residents of the State in which we have met, but whose names do not as yet appear upon the roll of members of this Society. Our list of members from Connecticut is already quite large, and embraces names with which you are all familiar; but it is desired that this list may be much extended as the result of meeting here to-day. It is no purpose of this Society to conflict with any State or local society, but rather to supplement these. Its territory embraces the whole Connecticut Valley, as its name implies. It is democratic in its principles, harmonious in its actions, and solely devoted to the advancement and progress of its membership and the profession at large. Our Committee on Membership will be happy to receive a large list of names of such as may wish to avail themselves of the privileges that the Society affords and join in its work. Confident in the anticipation that you may fully realize the bright prospects in regard to these things, I will detain you no longer.

DENTAL STATUS OF THE DOMINION OF CANADA.

An essay on the above subject was read by Dr. Geo. W. Lovejoy, of Montreal, P. Q., which will be found commencing on page 291.

The following discussion followed the reading of the paper :

Dr. C. FONES : Does the Board of Examiners recognize the degrees of United States dental colleges ?

Dr. LOVEJOY : Of course it does, but only when possessed by our own students. (Laughter.)

Dr. MORGAN : Does the doctor see a general partiality toward the Provincial schools on the part of the profession, and if so, has it a lowering tendency upon the students ?

Dr. LOVEJOY : It does lower and is lowering the status of the dental profession in the Provinces.

Dr. R. A. FONES : The college in Toronto is the only one, as I understand it ?

Dr. LOVEJOY : Yes. There is no other course of instruction open to students in the Provinces.

The following paper was then read, on

DENTAL HYGIENE. BY ROBT. A. FONES, D.D.S.

The question often presents itself to the mind of the dentist while engaged in the practice of his profession—or rather in that department which aims at the repair of damage to the teeth by caries—if he devotes enough thought and energy, and is as much interested in the prevention of diseases of these organs as he is in repairing them. We are necessarily so occupied filling and replacing teeth, that another department of our science that is of more importance is neglected. The reasons are : First, and most important, because more patients present themselves for reparative treatment ; and second, they are more willing to pay for and endure treatment that will relieve them of conditions for which they are mostly responsible, than for advice to practice preventive measures. Does the advice generally given prevent decay when followed ?

What are the best hygienic measures to take to prevent caries ? On this subject the dentist must have strong convictions in regard to the causes and prevention of caries in each case. To be able to give proper advice it is necessary to have a knowledge of the laws of growth and development ; of anatomy, physiology, pathology and hygiene. The treatment must be so comprehensive that the patient can understand and practice it.

I do not intend this paper to be an elaborate presentation of the sub-

ject of dental hygiene; I merely wish to advance a few ideas in regard to the causes of caries and their prevention. The causes of caries are hereditary, constitutional, systemic and local. In the first class of causes, called hereditary, the patient may be well developed physically, while the teeth are of a poor texture, decaying readily; or the texture may be good, while fissures, pits and depressions exist. In many cases the teeth decay when there is otherwise a good physique and vitality. There is not always uniformity in a human organism. A good muscular system does not always denote good lungs nor good teeth. The lungs may be susceptible to disease when otherwise there is a good organism, and so with the teeth in hereditary cases. The cause or causes may be very remote. In these cases the teeth may improve in successive generations if the laws and conditions tending to their improvement are observed, such as intermarriage with persons possessing good teeth.

Constitutional causes are those where the subject has come from good stock, but the proper conditions not having been observed by the parents before and during gestation, the offspring has to suffer the consequences and is constitutionally weak—has less vitality than either of the parents, and poor teeth, possessing very little resistive power. In cases of this kind the treatment should be the same as in the systemic cases, of which I will speak further on. Its intent ought to be to improve the constitution of the patient. If the teeth are decayed it will call for local as well as general treatment.

Systemic derangement is a cause of debility. This is the most prolific cause of decay of the teeth; the disease is in most cases an indication of systemic derangement. There are different causes that will produce this condition, but I will speak of the most common. In the practice of dentistry, to one who takes any pains to observe, it will be plainly evident that the course of studies pursued in our common and high schools tends to exhaust the system and break the constitution of the pupil. The evil results are apparent by their effect on the teeth. The girls suffer more than the boys, as their habits of life are more sedentary, and also because of their peculiar physiological characteristics. To illustrate its effect on them I will cite but one case. A girl fourteen or fifteen years of age, of muscular temperament, came to me with her mother to have her teeth examined. It was necessary to fill one of the superior centrals. There were faint signs of caries in the fissures on the grinding surfaces of the inferior molars. The girl had naturally a good constitution and good teeth. I did not fill the molars, as they did not wish to have the work done at once if it could be postponed for a while.

I did not think it would be necessary to fill them for at least a year. I saw her again within six months, and was astonished to find that the decay had progressed so rapidly that it was necessary to fill at once. This patient was naturally strong and ought to have been in a healthy condition, but she was very nervous and easily fatigued, and had very little endurance. I remarked to her mother that nature had done well by the girl and she ought to be in better condition. She said she was not strong—that her stomach troubled her a great deal. I intimated that perhaps she was studying too hard. She said that the patient studied very much, and that all the spare time after school until 9 P. M. was given up to it. I advised her to stop it, unless she had a great desire to pay physicians' and dentists' bills. This case shows the effect of such a course on one of good origin physically and naturally inclined to be strong, if nature had a chance, and if there was not such a constant drain on the system. Close mental application without exercise for four or five hours a day, five days of the week, besides the time required out of school to "get" lessons, is enough to make invalids of the whole generation. Such a course could not be pursued by a strong man or woman for any protracted length of time without serious injury to the health, unless great care was taken to obtain outdoor recreation. Then what must be the effect on growing subjects, when nature requires that all the conditions shall be favorable to the physical development? Under the present system of education the pupils are overtaxed; the nervous system is exhausted, digestion is impaired, there is a lowering of the vitality, there is more waste than repair, and a corresponding depression—in fact, all the vital functions are interfered with at a time of life when nature has not only to maintain the existence of an organism, but to increase its size and strength. The vital force that ought to be expended in the muscles and bones to make them larger in size and better in quality, thereby generating more force by this functional activity, is wasted in the brain, to the lasting injury of that organ and the system generally.

Dalton's Physiology, page 137, says, that "the secretion of the gastric juice is much influenced by nervous conditions." Fatigue, anxiety and nervousness are chronic conditions with a great many of the scholars. It is more evident just previous to examinations. It is maintained by some that this course of mental gymnastics trains and strengthens the mind. In my opinion, its tendency is to enfeeble it. It cannot be denied that a great deal of the knowledge thus acquired is not retained, and if retained will be useless to most of the pupils. A normal func-

tional activity of all the faculties of the mind is conducive to health and good morals, but the present system is ruinous. Too much is not learned in the schools, but too much is attempted. A system is wanted that recognizes the rights of the weakest scholar. Put the tasks down to come within the scope of those of medium intellectual power and physical strength. Strengthen and improve the weak, instead of weakening the strong. It is the evil of the present day, that too much importance is attached to mental training and not enough to physical. Until physical development is regarded in our educational institutions as being as important as mental, we shall have diseased conditions in the mouth to treat that are a result of systemic derangement, and cannot be cured except by improving the physiques of several generations. When the race comes nearer to perfection physically, we shall find better teeth, and disease exceptional, instead of the rule.

There are other causes that injure the teeth—in fact, anything that has a tendency to pull down or debilitate the system. If the teeth of the people continue to degenerate, it will not be more than a few generations before it will be impossible to save them by filling, as it is now in some cases. Let us hope that there will be a thorough reform in our civilization, and that everything that tends to interfere with physical growth will be swept away, and the "coming race" be physically perfect.

Local causes are those occurring in the mouth. I will not rehearse here the different theories in regard to the local agents that cause decay. The chemical, chemico-vital and leptothrix buccalis theories you are no doubt all familiar with. I have endeavored to show that the principal cause is not in local agents or conditions independent of systemic conditions. In fact, where the physical conditions are right and reasonable, and attention is paid to cleanliness, the teeth do not decay.

DISCUSSION.

Dr. E. S. NILES, Boston: It is a fact that we are striving to do but little more than stop cavities of decay, instead of giving greater attention to the prevention of the disease. Magitot's experiments prove that acid generates between the teeth and causes decay. Tests with sugar, albumen, acids of various kinds and various proportions, in different forms, upon teeth, prove this to be true. Butyric and lactic acids will soften and dissolve teeth; acetic and citric acids act in the destruction of teeth in the oral cavity. When we consider that the saliva is never secreted in acid form, we can readily see that cleanliness will do away with much decay where the constitution is right.

Dr. GEO. A. MILLS: This question is very interesting and we are none too familiar with it. It is, however, very much like the game of battledore and shuttle-cock—a very puzzling question indeed. The suggestions by our friend Dr. Fones are very good and true. Parents need these suggestions. We have to come in contact almost daily with conditions that demand these suggestions, and we must approach parents in such a manner as shall increase their intelligence, and we shall aid our own very much at the same time. This matter of constitutional causes was brought up for discussion at the New York Odontological Society meeting by Dr. Beers, of Canada, and it was discussed *pro* and *con*. The longer I listened, the more I made up my mind that dental caries is a result of civilization. I am satisfied in my own mind we shall find in the future a true cause for this disease in nervous degeneracy. We are living faster than any nation on the globe. The doctor then referred to Dr. Geo. A. Beard's classification of neuroses—to his articles recently published upon sexual exhaustion, in which much truth could be found, however extreme the statements might appear.

Dr. W. S. ELLIOTT, Brooklyn, said: I would rather, being a stranger here, have said nothing, but I take great interest in this subject, and as I have been called upon I will say a few words. Dr. Beard's articles on neuroses are very valuable contributions to scientific literature. We should know that the secretion from the mucous follicles is acid; that in contact with air it is acid, but in contact with the secretion from the salivary glands it is neutralized, if the saliva is healthy. Where there are asthenic conditions we can expect no other than acid oral secretions. If the nervous system is up to standard the secretions will be normal and calcific deposits healthy, as we have just heard. Civilization is the cause of dental caries. Our fighting the disease is not intelligent, our methods are not well defined. The cause being degeneracy, we must lift ourselves from this position of simple mechanical status, and learn more concerning the physiological and chemical changes, and their effects in degeneracy.

Dr. NILES: I am to understand that the normal state of the mucus is acid?

Dr. ELLIOTT: The reaction of it in contact with the atmosphere will result in its being acid.

Dr. NILES: Regarding certain physiological or chemical changes in tissues not exposed to atmospheric influence, I would say that certain muscular and nervous tissues become acid by over-activity.

Dr. ELLIOTT : It is difficult to state what is normal action. A standard of health reveals acid reaction of the mucous secretion.

Dr. C. FONES : I agree with Dr. Elliott in regard to degeneracy from overwork or study, and the effects upon the teeth. They are supplied with vessels of nutrition, the same as other bony tissues, peculiar to their kind. Study or work that emaciates or exhausts nervous force will exhibit the result in the teeth. The forces of good and strong teeth will resist decay, and those influences productive of decay. Those people who care for their teeth will not be free from caries if the resisting forces are insufficient to prevent it. A gentleman whose teeth were filthy to a great extreme applied to me for relief, but there was no decay. I suppose that *any* acid you might look for could be found in his mouth. Observation convinces me that systemic conditions are where we shall find the cause of this disease.

Dr. MILLS : The disturbance of the equilibrium is the cause of caries of teeth. Look at the aborigines ! They show perfect freedom from decay and perfect physical organizations. "Satisfied solution," as Dr. Atkinson would call it, perfect equilibrium. Place the Indian under our conditions of life and the same trouble would soon be his.

Dr. NILES : How do you account for the excellent teeth of the Germans, the most intellectual people, as a nation, on earth ?

Dr. MILLS : Dr. Magitot says of the Germans, that the further you depart from a low mental status and high physical type—of which class, perhaps, we are most acquainted—the greater the prevalence of dental caries is found ; the same here in America, though not so marked. Where overstrained conditions exist we find the greatest amount of decay.

Dr. R. A. FONES : My object in bringing the subject up is to give our patients the benefit of it. What can we do if parents come to us saying, "Our children's teeth are decaying fast, where is there a remedy ?" If I find—as I usually do—that they are studying too hard, I tell them to stop their studies, or lessen them in great degree.

Adjourned.

NO "BATTERY" IN A TOOTH.

BY CHAS. MAYR, A.M., SPRINGFIELD, MASS.

A new opinion, advanced with the emphasis with which Dr. H. S. Chase defends the hypothesis of galvanism in teeth filled with gold, cannot fail to attract general attention. In a club of dentists of this city

my attention as a specialist in practical chemistry and electricity was drawn to this subject, and chiefly to Article IV. in the *Independent Practitioner* of February, 1880, pages 77-81.

When I had read the article, I felt my whole chemistry and electricity crumble to pieces, if the facts at the bottom of page 79 were true ; they were so startling that I at once began careful investigations, and the results were so completely in accordance with the well-known facts of chemistry, and so absolutely against Dr. H. S. Chase's "facts," that in the interest of truth and science I thought it necessary to give my results here.

I first have to correct some erroneous statements of Dr. Chase, so discordant with the "text books on electricity," that "every dentist who has studied the elements of electrical science" must admit their untenability.

Dr. Chase always uses the term "battery" instead of element or combination. A battery is a combination of *several* cells, each cell containing an electric combination, or of elements. A tooth never can be a battery; it can only be a cell or a combination as long as it does not contain several distinct cavities all properly prepared and connected.

Then he says : "A galvanic battery may be composed of almost any two different substances." The little word "almost" is very important. Why not of any? If Dr. Chase goes further in his "text books" he will find that *both* substances must be conductors of electricity. Thus we have electrical combinations not only of two metals, but also of two liquids, even of metals and salts, but always both substances must be conductors ; *e. g.*, glass at common temperature is a non-conductor of electricity, at least not a worse conductor than dry dentine or "dentos," and no "battery" can be made in which glass is one element, even if the liquid be hydrofluoric acid, which attacks glass most violently ; yet if we melt glass, it becomes a conductor of electricity and—as Faraday observed—capable of forming an electric combination. Dr. Chase himself is aware of this fact. At the end of the article he says, "gutta-percha fillings being non-conductors, form no battery (!) with dentos." Is "dentos" a conductor of electricity? Most certainly not! Dentos, being a mixture of carbonate and phosphate of lime with organic substance, is, when dry, as complete an insulator as ivory ; by becoming moist, not the insulating substance becomes a conductor, but the liquid filling the pores conducts the current ; the porous cells of Grove's battery are dry insulators as well as moist, yet they let pass the electricity through their pores when these are filled with moisture, acid,

etc., without becoming electrical elements themselves. On page 78 Dr. Chase uses the term "strong." What is strong—the electromotive force (Volts), or the intensity of the current (Webers)? As Dr. Chase uses the term "battery" wrongly, he should state exactly what he means by "strong" in an exact scientific sense.

To enter into all his little inaccuracies and logical sommersaults would be an unnecessary loss of time and not help our object. He gives the coefficients of conductive power :

Gold, 60.	While they are :	Gold, 60.
Tin, 30.	"	Tin, 15.
Amalgam, 10.	"	Amalgam (?).

Did Dr. Chase determine the conductive power of amalgam? For no text book gives any value of it, and it cannot be supposed that he puts figures at random in a scientific essay.

Gold and "dentos" a battery! if this combination gives electricity, then gold and glass, gold and gutta-percha, nay, any combination will give a current, if the liquid is so chosen that it attacks one of the two substances. Dr. Chase would really have solved the all-vexing question to obtain cheap electricity—*e. g.*, copper, muriatic acid and marble would fill all requirements—and yet such batteries are not used! How does Dr. Chase come to the figures of "strength of batteries"? They are so fantastical that they are above criticism.

But the worst comes now, and gives me the chief cause to enter into polemics with a well-known dentist. Dr. Chase speaks of his prepared cubes and how they were filled with gold, amalgam, etc., and exposed to the action of vinegar, and then he gives the loss in each case after one week's immersion.

Who, doctor, made these experiments? There are only three suppositions as to how such results could have been obtained: that the experiments never were actually made; that they were, as chemists say, monstrously "doctored;" that the experimenter was very unskilled and inexperienced in such kind of work, and that his apparatus was insufficient. In face of the well-known character of Dr. Chase, the first two suppositions have to be abandoned.

Scientific experiments must be reported, so that every one can repeat them who has proper instruments and skill. Now, there is a great deficiency in Dr. Chase's statements. What is the exact strength of your acid? What is the absolute weight of your cubes? It is necessary to give it, since you give the absolute loss. What was the amount of liquid used? Are you sure that your cubes were made from teeth comporting

themselves identically to the acid? Did you dry your cubes equally before and after the immersion in the acid? Did you never use a cube twice? It is necessary to ask these questions, since a careful investigation of the subject has shown me how important it is to observe every possible precaution in experiments of this kind; perhaps, in answering questions, Dr. Chase himself will find the source of the incredible and faulty results which he obtained.

As far as the scanty report of Dr. Chase enabled me to repeat his experiments, I have done this with all the precaution which many years' study and practice have taught me, and have come to the following results:

1. Experiments with plugged cubes are absolutely incomparable with each other, if not verified and compared with the results obtained with an unfilled cube of the very same tooth.
2. Different teeth and cubes made thereof lose very differently in the same acid, in the same time, without any visible difference in their structure; *e. g.*, 6 teeth lost in 500 ccm. of acetic acid (vinegar), of 2.1 p. c. strength, respectively, 13.5, 17.5, 25.3, 12.8, 18.9, 14.4 p. c.; the loss included almost no organic substance, but only the inorganic salts, so that a tooth or cube of a tooth never can be used twice.
3. That the drying before and after immersion has to be done very carefully in a water-bath; the balance should give milligrams ($\frac{1}{60}$ grains).

As I think that a full report of my experiments is not of sufficient interest to all the readers of the *Independent Practitioner*, I only give the results; the exact report of the experiments is at every one's disposition if required.

I accompanied every root plugged by a reliable dentist of this city respectively with gold, amalgam, gutta-percha, oxychloride, with another root of the same tooth, so as to see plainly what the filled root would have lost if not filled; both roots were of nearly the same weight. I brought both roots to equal surfaces exposed to the acid, by filling the cavity of the test tooth with some wax, which by previous experiments I had found to be absolutely without influence on the solubility of the tooth; all the four plugged roots, together with the four test roots, were put into the same vessel, covered with 500 ccm. acid of the above strength and left entirely undisturbed for one week. The average weight of an unplugged root was about 300 milligrams, and the average absolute loss about 18 p. c. Supposing Dr. Chase's cubes of about 300 milligrams (the absolute figure matters little here, since the

relative loss in comparison with a wax-filled root is the chief point), his cubes lost :

Gold-filled cube	20 p. c.
Amalgam "	13 p. c.
Gutta-percha "	3 p. c.
Wax-filled "	3 p. c.
Oxychloride "	- p. c.

Taking the wax-filled cube as the point of comparison, we find the following excesses of loss above the otherwise filled cubes, as obtained by Dr. Chase, compared with my experiments.

DR. CHASE'S EXPERIMENTS :	MY EXPERIMENTS :
Gold-filled cube + 17 p. c.	- 0.9 p. c.
Amalgam " + 10 p. c.	+ 1.9 p. c.
Gutta-percha " - p. c.	+ 1.3 p. c.
Oxychloride " - 3 p. c.	- 1.9 p. c.

Every one who understands how to read from experimental figures sees that in my experiments there appears nothing like a law; the figures show, that the filling, except with oxychloride, has no effect on the solubility of "dentos;" the differences are merely accidental, due to structural difference, only in the case of the root plugged with oxychloride I could find a connection between the smaller loss, though even in this case the total difference was but 1.9 per cent.; the oxychloride neutralizing the acid in the immediate neighborhood of the tooth, hereby indirectly protected the tooth; I even could collect about 12 mgr. of acetate of zinc, crystallized near the tooth. Dr. Chase has a most remarkable natural curiosity, more astonishing and valuable to chemists than the great diamond, a tooth which after being simply plugged with oxychloride lost nothing by one week's immersion in his acid, in which a gold-plugged tooth lost 6 cgr. !! The root thus plugged in my experiments lost fully 12.5 per cent. absolute weight! Here, doctor, is an enormous experimental discrepancy. Though Dr. Chase doubtless has done great service to dental science by directing the attention of truth-seeking dentists to this very important subject, yet his hypothesis, based on wrong notions of electricity and on absolutely erroneous "facts" and faulty experiments, has to be abandoned.

I shall not attempt to show the weakness of the "battery" theory by the numerous dental facts that can be brought against it; I only wish to draw attention to a single one. If the theory of "batteries" in teeth was right, the simple conclusion would be that in *all* cases a gold filling

would lead to a rapid decay of the so filled tooth ; yet dentists assure me that thousands of people who have their decaying teeth plugged with gold never suffer from consequent decay, and that even after having for 30 to 50 years a "battery" in a tooth, this tooth is as sound around the gold filling as on other places. Is this true, doctor, and how does it agree with your theory ?

It is an undeniable fact, that often a gold filling does not arrest secondary decay when other fillings do; yet I think that physiology, chemistry and mechanical forces are fully sufficient to explain this fact, without having recourse to chimerical batteries. That under special circumstances galvanism may be generated in the mouth by f. i. different metallic fillings, contact of different metals, thermo-electricity, etc., is very well possible, yet the chemical action arising from such conditions will be so infinitely small—though the effect on a nerve might be quite considerable—that it would be of no account compared with the large amount of chemical action brought about by the different liquids in the mouth, tooth and pulp.—*From The Practitioner.*

TRANSACTIONS OF THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, April 5th, 1880.

ALFRED WOODHOUSE, Esq., President, in the Chair.

The minutes of the previous meeting having been read and confirmed,

The following gentlemen signed the Obligation Book, and were formally admitted to Membership by the President, viz. :

Messrs. MARTIN HENRY, WILLIAM MAGGS, A. BAXTER VISICK, W. F. THOMPSON, W. ST. GEORGE ELLIOTT and GEORGE PEDLEY.

The following gentlemen were balloted for and elected Members of the Society, viz. :

HUGH WILLIAM DEWES, L. D. S., England, 10 Cavendish Place, W., and

LAWRENCE READ, L.D.S., England, 18 Hanover Street, Hanover Square, W., Resident Members.

GEORGE JOSEPH HUGO, 15 Allez Street, St. Peter's Port, Guernsey, and MAURICE HUGO, 36 Belmont Road, St. Heliers, Jersey, Non-resident Members.

Council has received applications from :

WALTER PAXTON HARDING, L.D.S., Ire., Bronala, Carnarvon, North Wales.

GURNELL EDWD. HAMMOND, L.D.S., England, 43 Leinster Square, W.

THOMAS S. CARTER, L.D.S., England, 26 Park Square, Leeds.

Mr. HENRY SEWILL read the following casual communication :

Mr. PRESIDENT : Having your permission to bring forward the communication which I am about to make, I need not apologize for what, under ordinary circumstances, might be a breach of order—namely, the reference which I must necessarily make to Dr. Brunton's paper, read at our last meeting, and to the discussion upon it. It will be recollected that in the discussion I stated, as a mere matter of fact, that I had not, either during twelve years of hospital experience or elsewhere, met with a case of epilepsy due to diseased teeth, and I said that I believed such cases to be extremely rare. I did not say, nor did I mean to imply, that the teeth could not possibly cause epilepsy ; in the present state of our knowledge such a statement could not be supported by any adequate reasons. If the inflammation following the prick of a needle at a part so remote from the nervous centres as the hand or foot may excite the spasms of tetanus, there need be no difficulty in believing that the inflammation of nerve fibrils within a tooth may occasionally give rise to the convulsions of epilepsy. And especially can we admit this when we recollect that in the case of the teeth it is a cranial nerve whose branches are directly the seat of irritation.

I did not by arguments support my statement with regard to the extreme rarity of epilepsy due to diseased teeth, for I imagined that this fact would be admitted; but I might have pointed out that did the teeth act as excitants of epilepsy on any but rare occasions, epilepsy would certainly be a much more common disease than we now find it. The number of children, especially among the poor, who go through childhood and youth suffering almost incessantly from inflammation of their dental nerves must be reckoned by thousands, and if, as a consequence of these teeth diseases, epilepsy followed in even a small proportion of cases, it would be, if not as common as measles, certainly much more frequently met with than at present.

What led me to recur to this subject, was the fact that shortly after our last meeting, in conversation with several of my friends, physicians especially learned in diseases of the nervous system, I found a remarkable unanimity of opinion on this point. Several of these gentlemen have been kind enough to give me their views in a few briefly written sentences, and these I will now read to the Society :

Dr. GOWERS, who has just delivered the Gulstonian Lectures on Epilepsy, before the Royal College of Physicians, in which he has especially and exhaustively discussed the etiology and causation of this disease, writes as follows :

" I have never met with a case of epilepsy in which there was any reason to attribute the fits to the irritation of decayed teeth. I think that the facts which have come under my notice justify the assertion that, if this cause is operative, its ratio to other causes is less than 1 per 1,000."

It will be observed that Dr. Gowers says, " its ratio to other causes is less than 1 per 1,000," so that I take it we might search the country through without discovering a single case.

Dr. SIEVEKING, who was for years physician to the Hospital for Epileptics, and is well known as one of the highest practical authorities on epilepsy, says :

" In reply to your question as to the connection between epilepsy and diseased teeth, I should be disposed to affirm that, apart from the convulsions due to dentition in early life, the teeth very rarely afford an exciting cause for epilepsy. I do not at the present moment call to mind a single case in my own experience where such a connection was traced. I have had many cases where some form of indigestion played this part, and it is not impossible that in some of them imperfect mastication was an efficient cause of the irritation propagated to the brain, there inducing the changes that lead up to the epileptic paroxysm, but this does not come within your category of *diseased teeth*."

Dr. HUGHINGS JACKSON's name needs no comment to enhance the value of any deliberate statement which he may make. He says :

" I do not think that anything wrong with the teeth is a cause of epilepsy ; nor have I ever met with evidence to show that it is an exciting cause."

Dr. FERRIER, whose name and works are well known to all here, writes as follows :

" MY DEAR SEWILL : I had not altogether forgotten your query as to the relation, if any, between dental irritation and epilepsy. I cannot,

however, among the numerous cases of epilepsy which I have seen, call to mind one in which the circumstances were such as to suggest any such connection. Cases are, however, on record in which peripheral irritation seems to have been at least the exciting cause of epilepsy, which has ceased with the removal of the irritation. I question, however, whether this would be sufficient to induce epilepsy in any case without the previous existence of such an irritability of nervous tissue as might manifest itself at any time as an attack of ideopathic epilepsy, so called.

"In cases of epilepsy in connection with peripheral irritation, the fit is usually preceded by an aura starting from the seat of irritation. If dental irritation was at the bottom of an attack of epilepsy, I think we should find some such evidence in a dental aura. I have never met with such a case. Such a thing is, however, highly possible, and I am only giving my own experience when I say it is unknown to me.

"In attempting to solve the question raised, I should lay stress mainly on the existence of a dental aura, in proof of a relationship between dental irritation and epilepsy, and not on the mere *existence* of dental irritation, which I suppose occurs equally among epileptics and non-epileptics.

"Yours very sincerely,

"DAVID FERRIER."

Dr. BUZZARD, another high authority on this subject, says :

"I have in no case been able to satisfy myself that epilepsy was caused by disease of the teeth. In the case which I send you herewith, there appears to be evidence of a rather close connection between the process of second dentition and the occurrence of epilepsy. If this comes within the scope of your discussion you are very welcome to read it or to refer to it."

"A CASE OF EPILEPSY AND FACIAL NEURALGIA COINCIDING WITH THE PERIOD OF SECOND DENTITION. BY THOMAS BUZZARD, M. D.

"Charles ——, at eleven, was brought to the National Hospital for the Paralyzed and Epileptic, on February 26th, 1873, on account of epileptic fits.

"He was a delicate-looking lad with a well-shaped head. He had been weakly and backward in childhood, not walking till he was twenty-two months old. The eruption of the temporary teeth was much delayed.

"In May, 1871 (when nine years old), he fell one morning from his chair into the fender. At this time he was cutting a lateral incisor. A

couple of months later he was found one day lying in his vomit in the garden quite insensible, the limbs slightly struggling. Two months after this he came home from school, and whilst standing at a table a spasm seized his right arm and he upset the tea-pot, then said, 'Edie's knocked my arm!' turned up his eyes and turned round. He struggled much and his face became blue. The fit lasted nearly an hour and a half; during the latter part of it he screamed out expressions like 'Let me go, let me go!' After this he took bromide for six months. During this time he had three or four fits, the first of which were bad, but the later ones slighter. The bromide, it was thought, had weakened him.

"At ten years of age he cut the two lateral incisors of the upper jaw. During this process he suffered twice a week or so from what is described as 'fearful' neuralgia of the two upper divisions of the fifth nerve. This lasted six weeks and then ceased till the middle of December last, since which he has had more or less neuralgia every day—sometimes for three hours together. Both sides of the face are affected, and the pain appears to start from the upper temporary canines, which remain unshed. The right one is tender on hard pressure.

"His father is a strong, healthy man. His mother suffered much from tic between sixteen and forty-six years of age. *Her* father and three of her brothers have also had tic.

"The boy had a fit while being examined. He bowed his head down. The pupils dilated largely and then contracted very much. There was then convergent strabismus and tonic spasm of the extremities, followed by clonic convulsions. It appeared that for the last week the boy had suffered about four attacks like these daily.

"Dr. Buzzard advised removal of the right canine tooth, and ordered cod-liver oil, with quinine and iron.

"*March 12.*—The neuralgia has much diminished since the tooth was drawn, and the boy looks better. He has had two severe fits, besides three or four attacks daily of co-ordinated convulsions, in which he tries to bite his fingers, and complains of 'something turning round at the top of the head.' He had an attack of neuralgia of the upper divisions of the fifth on the right side, but it only lasted a few minutes. The treatment was continued. The neuralgia almost disappeared, but he continued to have a fit daily, usually in the evening. He greatly improved in appearance

"In May it is noted that he had in the preceding month three bad epileptic fits and many slighter ones. In June the fits are said to be

more frequent, but he had nearly lost the shaking of the right arm by which they had been usually preceded.

“The treatment adopted included bromide of ammonium, sumbul, valerianate of ammonia, besides cod-liver oil pretty constantly. In December it is noted that he has had no epileptic fit since July, but facial neuralgia once a week.”

“*January 21, 1874.*—Has had a slight epileptic fit. He had cut another molar a week before it occurred. He has now nineteen teeth, of which there are four permanent molars and eight permanent incisors.

“*March 4.*—Has had numerous fits till a tooth (? bicuspid) came through; since then they have much diminished. He continued treatment during the year.

“In the following May, 1875, he cut three teeth. His health had now remarkably improved. The fits were very slight. He occasionally had an aura passing up the right foot, but not ending in a fit.

“*July 18, 1875.*—It is two years since he had a bad fit, and nine weeks since he had a slight one, and in this he scarcely lost himself. The canine teeth project considerably, but have not descended to the level of the others. He never has neuralgia now. He was discharged.

“In March, 1880, nearly five years later, he was brought to the hospital again. It seemed that he remained quite well and had no return of fits till fifteen months ago, since which time he has had a few, but not severe ones. About four months since he complained of pain at the back of the jaw, and it was found that he was cutting his lower wisdom-teeth.

“*Remarks by Dr. Buzzard:* It is of course constantly happening that the occurrence of epileptic fits coincides, in point of time, with the process of teething; but, except in this case, I do not think that I ever met with any evidence that the connection between the two circumstances was more than that of association. In the case just related, typical neuralgia of a very severe kind occurred at the period of second dentition, and was unmistakably influenced by the removal of a tooth. At the same time, with the neuralgia, fits occurred which were usually of a hystero-epileptic character, though some must be described as distinctly epileptic. The fits and the neuralgia often appeared to replace each other, and thus suggested that they might be immediately dependent upon a common source of irritation.

“It is worthy of note that the fits were diminished in frequency after the eruption of a tooth, and entirely ceased when second dentition was

accomplished, and that the lad remained free of them, as well as of neuralgia, for three years and a half, from about fourteen to seventeen and a half years of age. During this period he took no medicine whatever. A recurrence of fits has since taken place, commencing not long before the cutting of wisdom-teeth.

"It appears to me that in this case there is a very considerable probability that the process of dentition, in a patient with strong neurotic inheritance, has determined the occurrence of epileptic and hystero-epileptic seizures."

Mr. SEWILL continued : I think I have been accidentally enabled to place on record in our *Transactions* a deliberate judgment with regard to the relation of the teeth to the causation of epilepsy as weighty as it would be possible to produce, and this must be my excuse for troubling you with these remarks. If our opinion be asked in any case as to whether epileptic convulsions may be due to diseased teeth, I think the answer must necessarily be that it is extremely improbable, though possible, that the teeth are the cause of the malady. And we may at least add, that seeing that the possibility does exist, it would be well, should there be no contraindication, to remove all dental irritation, in the faint hope that with it might also be removed the exciting cause of the epilepsy.

In endeavoring to establish a diagnosis, it would also be well to bear in mind the fact which Dr. Ferrier points out, that fits due to the teeth would probably be preceded by an aura felt in their neighborhood.

Dr. WALKER said he thought that thanks were due to Mr. Sewill for having called the attention of these eminent members of the medical profession to the fact that dental irritation might produce epilepsy, as shown by the case recorded by him in the *Transactions of the Odontological Society* of last month. He felt convinced that dental irritation was an occasional cause of epilepsy, and he could only explain the statements to the contrary, which had been read by Mr. Sewill, by supposing that the attention of these physicians had never been specially directed to the subject ; he was glad that this had now been done, and he thought that if the same question were to be again put to them six or seven years hence, their verdict would probably be different from that which had just been quoted.

Mr. COLEMAN said he also had no doubt that dental irritation was an occasional, and not very uncommon, cause of epilepsy. As medical authorities had been quoted on one side, he would refer on the other to the late Dr. Baly, who published in the Abernethian *Transactions* the

case of a prisoner at Millbank, who suffered from fits which were evidently due to nervous irritation set up by a tooth. He did not quite understand what Dr. Ferrier meant by a "dental aura;" the expression was not quite clear.

Mr. OAKLEY COLES said that at the last meeting he mentioned the case of an epileptic girl whose fits ceased after the extraction of two carious teeth. This patient was sent to him by Dr. Ferrier, with the suggestion that possibly attention to the state of the teeth might prevent the fits. Yet Dr. Ferrier stated that he had never met with a case in which epilepsy was directly caused by dental irritation. If the bad teeth were not the cause of the epilepsy in this case, he could only say that he was under a misconception as to what was meant by the term, "direct cause."

Mr. SEWILL, in reply, said that Dr. Ferrier had in his letter readily admitted the possibility of epilepsy being occasionally due to the irritation of diseased teeth, though he said he had never happened to meet with a case in which the connection could be clearly established. The notes he had read were not formal documents, but were written in a friendly, conversational style; the writers had stated their opinions as briefly as possible, without at all entering on the grounds upon which they had been formed. He thought, however, that it might be taken for granted that men of their acknowledged position would not deliberately give an opinion on a subject to which they had paid no attention, and that they would have been quite able to substantiate them by good and sufficient reasons, had they been called upon to do so. By the term "dental aura," he understood an aura shooting from, or apparently originating in, the dental nerve.

Mr. OAKLEY COLES then presented to the Society a set of models illustrating every variety of deformity of the upper jaw, including those due to the effects of syphilitic disease.

(To be continued in our next issue.)

HARVARD ODONTOLOGICAL SOCIETY.

At the Second Annual Meeting of the Harvard Odontological Society, held on July 7th, 1880, the following officers were elected for the ensuing year: President, Dr. E. B. Hitchcock: Recording Secretary, Dr. J. G. W. Werner: Corresponding Secretary, Dr. E. S. Niles: Treasurer, Dr. F. Perrin. Prudential Committee, Dr. J. G. W. Werner, Dr. D. F.

Whitten, Dr. F. E. Banfield. Delegates to American Dental Association, Dr. E. S. Niles and Dr. D. F. Whitten. The annual address was delivered by Dr. E. B. Hitchcock. A paper on "Reflex Action" was read by Dr. E. S. Niles, and one on "Reminiscences" by Dr. F. Perrin. Dr. W. E. Page, Ex-President of the Society, gave a banquet, at which Dr. Werner read a poem entitled "Fair Harvard Odontological." The Society adjourned till the third Thursday in September next, when its regular monthly meeting will be held at the residence of Dr. E. S. Niles, 146 Boylston Street, Boston.

AMERICAN DENTAL CONVENTION.

The Twenty-sixth Annual Meeting of the American Dental Convention will be held in the City of New York on the tenth day of August, 1880.

Hotel accommodation has been provided at the Sturtevant House, Broadway near 29th Street; the Coleman House, Broadway and 28th Street; Continental Hotel, Broadway and 20th Street; Rossmore Hotel, Broadway and 42d Street, at the reduced rate of \$2.50 per day to members of the Convention and their families.

This change of time and place has been made to meet the wishes of the Southern Dental Association, who prefer to meet with us. It is hoped that the profession will embrace this opportunity to meet our Southern brethren again in one National organization.

Efforts are being made by the dentists of New York and Brooklyn which will give additional interest and attraction to this meeting in many ways (professional and social).

A programme will soon be issued, which, together with any information respecting the meeting, may be had at the Dental Depots and from members of the Committee.

J. G. AMBLER, New York,
CHAS. MERRITT, "
N. TOWNSEND, Philadelphia,
J. H. SMITH, New Haven,
A. MILLS, Brooklyn,
E. D. FULLER, Peekskill, N. Y.,
Executive Committee.

J. G. AMBLER, *Chairman Executive Committee,*
25 West 23d Street, N. Y.

BOOK NOTICES.

REVISED CONSTITUTION AND BY-LAWS AND CODE OF ETHICS OF THE GEORGIA STATE DENTAL SOCIETY, ATLANTA, GA.—This little work is, it is almost needless to say, specially intended for the use of the dentists of Georgia, who are members of the State Dental Society. The "Code of Ethics" of the Society, as here set forth, contains a large amount of good sense, which cannot fail to be recognized as such by all who take any interest in the honor of the profession. The duties of dental practitioners to their patients, the way to maintain the character of the profession, as well as the duties of the public to the practitioner, are set forth very concisely. The Act of 1872 regulating the practice of dentistry in Georgia is quoted at the end of the pamphlet; also the Act of Amendment passed in 1879. These lend additional value and interest to the work, and help to render it in many respects a valuable *vade mecum* to those who would improve themselves and observe the ethics of the profession. Printed by J. O. Perkins, 46 Whitehall Street, Atlanta, Ga.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION AT THE NINETEENTH ANNUAL SESSION, HELD AT NIAGARA FALLS. Knight & Leonard, Chicago.—In the volume before us we have in a complete form a report of the proceedings which took place at the Annual Session of the American Dental Association, held last August. The substance of the papers and discussions appeared in various numbers of the DENTAL MISCELLANY issued since August, but we unhesitatingly recommend those to procure this official publication who desire to possess the report in a collected form. It is well printed, and in matter as well as in style of issue is a credit to the Association. The Publication Committee are Drs. George H. Cushing, J. N. Crouse and George W. Kelly.

ZAHNARZTLICHER ALMANACK 1880 EIN ALPHABETISCH GEORDNETES NAMENSVERZEICHNISS DER IM DEUTSCHEN REICHE UND IN OESTERREICH UNGARN PRACTICIREN DEN ZAHNARZTE. Frankfurt-am-Main: Johannes Alt.—This little work, by W. Adolph Petermann, the object of which is sufficiently set forth in its title, contains the names of 631 graduates—many of them American. A number of valuable statistics are given at the end of the volume, as well as a list of the principal serial works issued in the dental interest in all parts of the world.

PORCELAIN PLUG IN A CAVITY.

FULTON, N. Y., July 10th, 1880.

Editor Johnstons' Dental Miscellany.

DEAR SIR:—Having had my attention called to Dr. Parmele's reply to Mr. Greene, I would call attention to "Taft's Operative Dentistry," second edition, published in 1868, page 231, under "Filling large cavities on the labial surfaces of superior incisors," where it speaks of the same operation, introduced to the profession by Dr. Volck, having been first suggested by Dr. Maynard. It does not say how many years before this it was suggested.

Yours truly,

B. F. MASON.

WASHINGTON, D. C., July 13th, 1880.

Editor Johnstons' Dental Miscellany.

DEAR SIR:—In answer to the request of Geo. L. Parmele (page 284, July MISCELLANY), I have now in my mouth, left superior central incisor, labial surface, a piece of artificial tooth plugged in by Dr. A. J. Volck over twenty years ago, when a student in the Baltimore College of Dental Surgery. I have seen and filled them in the same way. Dr. F. H. Greene's idea is nothing new to the profession.

Very respectfully,

H. B. NOBLE, D. D. S.

No. 1 MT. VERNON STREET, BOSTON, July 8th, 1880.

Editor Johnstons' Dental Miscellany.

DEAR SIR:—In reply to Dr. G. L. Parmele's request, I will say that I put a porcelain filling in a superior right central incisor, covering about a third of its length and most of its width, somewhere between 1854 and 1857. If important I can look up the precise date.

Yours truly,

JACOB L. WILLIAMS.

NOTES.

Effect of Sugar on the Teeth.

If we are to believe M. Lerez, whose views are published in the *Charleston Medical Journal*, the ancient prejudice against sugar is not without good ground. The conclusions of M. Lerez are as fol-

lows:—"1. Refined sugar injures teeth—either by immediate contact, or by gas developed in the stomach. 2. That a tooth soaked in sugar-water becomes jelly-like, from the sugar combining with the lime of the tooth."

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*September, 1880.*—No. 81.

THE AMERICAN DENTAL ASSOCIATION IN SESSION.

The American Dental Association's meetings, held at Boston during the first week in August, were an unqualified success. The subjects that came up for discussion covered a very wide range, but they were dealt with for the most part fully and ably; and although some minor topics relating to different parts of the Constitution of the Association received more attention, perhaps, than they deserved, the time was, on the whole, well utilized. Boston proved itself to be an appropriate and by no means inhospitable place in which to meet. The Association found itself while in session the welcome guest of the Massachusetts Institute of Technology, this body furnishing its hall free of charge. Then again, local hospitality was further illustrated by an afternoon's entertainment of the visitors by the mayor and representatives of the city in person, not to speak of another afternoon's drive into the country at the expense of the dentists of Boston. The gathering of 1880 will be surrounded with many pleasing and lively recollections by all who took part in it. This is by no means an unimportant matter. If meetings of learned and scientific bodies are to be well attended, and the greatest amount of good extracted from them, they must be made cheerful and interesting, and the more pleasure that can be associated with them without unduly entrenching on the time required for the transaction of business, the better. Boston is pre-eminently noted for its regard for refinement, intellectuality and learning; and although the dental profession is essentially a body of practical men, yet the Bostonians have been discriminating enough to

realize that in America it is coming irresistibly to the front, and that now, even from an intellectual point of view, it is deserving of no small share of notice.

In most of the sections the papers read were of a very valuable character, and obviously cost those who prepared them a great deal of care and thought. Some were more or less descriptive of scientific experiments specially interesting to dentists. For example, Dr. Barrett's paper on Anæsthesia, although in some important points at conflict with the opinions of great experimenting scientists, was calculated to draw a more careful attention to this subject than it has received from dentists hitherto. Dr. Barrett was criticised somewhat severely in the discussion that followed the reading of his paper, and although all his deductions could not be accepted unhesitatingly by his hearers, they could not fail to do much in an educational way, indirectly if not directly, to help at least some of the members of the Association to a better understanding of the principles on which anæsthetics act. This paper and the subsequent discussion would not be barren of results, if it proved to some that they knew nothing—comparatively speaking—on the subject, and set them thinking and examining it for themselves. An elementary knowledge of the properties and capacities of different anæsthetics, and above all of how it is that they affect the human organism as they do, is indispensable to the practitioner who seeks to exhibit them with immunity from danger.

We refer here particularly to this subject of anæsthesia and its treatment by Dr. Barrett (an abstract of whose paper we shall give in a subsequent issue), because it is one of those scientific subjects which especially demand the attention of the dental profession. As communities become enlightened by a spread of education, they will demand of dentists a much wider and more complete knowledge of anæsthetics than they now possess, and we trust Dr. Barrett's paper will do much to awaken the profession to this fact. As the doctor said, man has always sought refuge from the penalties of a broken law. Let us add, that while it would not be good for law-breakers to succeed always in finding such a refuge, it is yet within the province of scientific men and the members of those professions that the necessities of the age demand, to do what they can toward the alleviation of the woes under which a suffering humanity groans. We know that certain results generally follow the administration of certain anæsthetics, but so far we seem to have arrived at no complete knowledge as to how these results are brought about. There is here a wide field for experimentalists and learned scientists to work in.

The man who attempts to penetrate it has brought home to him with great force the fact that there is no prospect of the scientist ever being able to rest on his oars, grieving somewhat, as did Alexander, who had no more worlds to conquer, that there is nothing else in the domain of Nature to find out. But the field of anæsthetics is but a very small branch of science, and only its fringe has yet been touched. No one has hitherto been able to grasp it thoroughly. Many experiments will have to be made, and many giant minds will have to grapple with the problem placed by Dr. Barrett before the Association, before all is found out in regard to it that it is important for the dentist to know.

One of the most practical discussions of the session was on the relative value of soft and cohesive foil as fillings for teeth. This subject has, we are aware, been thrashed out time after time in meetings of State Societies, as well as those of a more pretentious character. But it is a subject which is of so much interest to the profession, and enters so largely into their every-day work, that we need offer no apology for briefly referring to the discussion which took place before the American Dental Association. It is needless to say that considerable difference of opinion was manifested, and the arguments used on each side were cogent, if not absolutely unanswerable, and proved that each class of gold has its advantages. The discussion showed also, that notwithstanding the opinions of some of the older school of practitioners, cohesive gold can be used in stopping teeth effectively as well as the soft, and that the appearance of the former is much better when the work is done. But, at the same time, the experience of those who related incidents of their practice pointed to the conclusion that greater skill is required in using the newer invention, and that in the hand of a novice it is more likely to prove unserviceable than soft foil would. It must be taken into consideration, however, that the American Dental Association does right to assume that none of its members are novices, and that they are not capable of blundering in the use of an article so well known and so popular as cohesive foil. That such men exist in the world the Association readily admits; but of them it is obliged to take no cognizance. It may be said, perhaps, that novices have no right to use any foil—be it soft or cohesive. Fortunately, the day of novices is past. Such being the case, it is not for us to discard the use of an article like cohesive gold, or even to say a word against it, because another article more antiquated and of inferior value as a filling for teeth happens to be easier for the young and inexperienced to manipulate. The Association does right in seeking to equip its members with such materials as

will render most service to the public and bring most credit to the profession.

As we have hinted, we should not have dealt in detail with either the subject of anaesthesia or gold, were it not that they are of special interest to every dentist, and enter largely into his every-day practice. It now only remains for us to congratulate the Association on its gathering of 1880. The members cannot but have gone home to the steady routine work of their offices with their wits sharpened, and with a somewhat keener insight into the different branches of their profession than they possessed before. Those who are disposed to be satisfied with the knowledge they have already acquired, will have been taught that for a man to keep pace with the times, he must labor with his head as well as with his hand. Others, who have accustomed themselves to look on study as a part of their daily duties, will have gained encouragement and help, and their work of the coming year will bear marks of the impetus received by meeting in friendly conclave with friends of like aspirations. All—whether hard workers or mere drones—will have realized afresh that life is a continuous educational period, and that there is a vast beyond stretching before them, unexplored but not unexplorable.

BIO-GENESIS, OR THE BEGINNING OF LIFE.

By W. S. ELLIOTT, M.D., D.D.S.

ANNUAL ADDRESS BEFORE THE SECOND DISTRICT DENTAL SOCIETY, DELIVERED AT NEWBURGH, N. Y.

It has been your pleasure, gentlemen, for a second time to call me to preside over the deliberations of this Society. The honor thus conferred I can assure you is fully appreciated, and I take this occasion to return to you my most humble and sincere thanks.

Seasons come, and seasons go;
Time, with rapid wing, flies on,
And we, as mortals, daily break
The bread of Life's vicissitudes;—
Speeding the hours of a latter day,
When in one grand effulgent ray
Of Life supreme, we bask away
The sunlight of Eternity.

My theme to-day is the theme of Life ; not as a sentiment, but physical, sentient life—life under law ; life as a phenomenon.

Nations, society and bodies exist as formal representations of a force which moves and pervades that which is moved ; therefore, we may promulgate our text, viz., that *Out of force comes form*. I have no desire to enter upon any discussion pertaining to the conflict between science and religion—but we may make convenient comparison of the various stages of the creative fiat as recorded in the scriptural text, and the facts as divulged in the analysis of the law of progress and evolution, to assist in answering the many inquiries which arise in consideration of our subject. Our text we are disposed to accept as a sufficiently stated truism, and its many provisions will receive our special attention at this time.

In the beginning, “the earth was without form, and void.” The inferential conclusion here is, that matter, in this, the dawn of morphological presentment, already existed, but in an undefined, chaotified state. It was void as to sensible properties and to form. The existence of a given potentiality was, however, certain, since this became manifest in the differentiated condition of matter, wherein it assumed those peculiar affections which give it entity and establish its tangibility. Matter became actuated ; that is to say, the embodied spirit—the power, and its specially energized differentiations, became the complete sufficiency and the fully pronounced summation of final cause. Aristotle asserts that absolute form is spirit ; this may be true, and some of us may be cognizant of the ruling of spirit independent of, and outside of, matter ; but the only physical tangibility comes to us through entities such as our sensuous faculties can appreciate. Force and matter, then, co-exist ; they are, respectively, given quantities—eternal and indestructible. The union of these two elements constitutes life ; but if this is all of life, then life is only an abstraction and beyond the province of physical consideration. But what is the nature of this energizing influence which constitutes the phenomena of being, or what is life, has been variously estimated. Prof. Owens says “life is sound ;” Schelling says it is a “tendency ;” Herbert Spencer calls it “a continual adjustment of internal relations to external relations ;” Dr. Meissner says it is “but motion.” We will call it an *answering impress*—an expression. Thus, for example—the answer which is responsive to the *impress* made upon the constituents of the crystal is its goniometric identity ; the terms of this identity are the seriations of processes in the crystalline formation. The *answer* of the seed-germ is the moisture-seeking rootlet, the uplifting stem, the trunk and branch, the twig and air-breathing leaflet, and the

light-transforming cell—with subsequent blossoming and fructification. And then the answer which echoes back to the time of the genesis of man and forward through eternal lapses, is made evident in that higher consummation of matter and mind, which in its complete potentiality and fruition was pronounced “very good.”

The basal phenomenon of life is evidenced in the simple element of motion ; where there is motion there is life ; where there is stillness there is death ; but we know no absolute stillness, therefore we know no death —all matter is actuated, all is life. Though we, as individuals, pass the period of individuality, we do not die—we live, and eternity only can measure its limitations.

The growth of the crystal demonstrates the existence of life not less in fact than does the springing up of the green blade from the buried seed, or the evolution of the animal body from the primitive embryonal corpuscle. Here exist ultimate causes which are as incomprehensible as those manifested in the growth of bodies denominated organic.

Who has not witnessed with wondering complacency the growing frost-forms upon the window-pane ? The projections given to the icy particles are evidences of life ; they shoot out with mathematical precision into plumes, plumules and plumulets, and every scintillation—the manifestation of sun-presence which here obtains—is measurable after a given degree of angularity. The order and arrangement of atoms and molecules are definite, showing, evidently, the *answering impress* of a mysterious agency.

Our outer or physical sense can take no direct cognizance of the elements of power which lie behind these phenomena, though the inner or conscious sense does admit the reality and necessity of a first cause which transcends all phenomena. It is not, then, within our province to tell of the beginning of life, for thus we would undertake to define its ending. We must accept the abstraction, and study only the processes of subsequent development.

Without special consideration of the possibilities of nature in regard to the generation of organic life from inorganic elements (though it is scripturally asserted that man was formed of the dust of the ground), we proceed in our inquiries from the simplest known form of organized being in which we first recognize the plastic results of sun-power,—the mediate factor of the entire process of growth and evolution. The physical atom and molecule are involved in the living mass, and through chemical analysis there is demonstrated the elemental constituents, C, H, N, O, P, S. Plastic force has organized these into granules and cells, in

which is exhibited the "tendency" to further and more complicated structure; when the most advanced process is fully pronounced and cerebral consciousness becomes the correlative of the forces which in the beginning actuated chaos.

In the material whence springs the more advanced organic forms, we recognize only a simple, homogeneous mass of elemental matter called protoplasm, or first mould. It has generally been considered only as an undifferentiated body, devoid of parts or variation, and resolvable, by chemical analysis, into specialized compounds of carbon. But it is doubtless organized, and is the embodiment of more than is symbolized in chemical formulæ, since it gives evidence of a degree of vitality which does not obtain in substances commonly recognized as inorganic. The mass is endowed with certain capabilities which characterize it as a living body. It is possessed of the property of irritability and of spontaneous motion, and will wander hither and thither in its liquid habitat by a system of locomotion which is peculiar and characteristic. This indefinitely shaped mass presents itself as the simplest condition of vitalized matter, and is technically called *moneron* (simple). It is capable of increase of body by absorption, and of division by fission. After attaining to a size measured by a limitation of endowment of accumulative tendency, it breaks into parts, by simple constriction, and seemingly in a purely mechanical manner; each of which parts becomes a complete moneron, having the same vital characteristics as were originally possessed by the undivided lump. Under the glass it will be observed that it continually changes its form by a kind of involution, a constriction and a corresponding protuberance of given points in its periphery, whereby it is enabled to surround and enwrap a portion of floating albumenoid matter with which it comes in contact and which serves as food. It is thus enabled to increase its bulk by an integrative absorption of the material thus enclosed. This is equivalent to feeding and to growth. This order of progression and development is termed amoeboid, or first formed, and completes the rôle of function ascribed to this classified stage of existence.

From this stage of apparent homogeneity the moneron enters upon one which is further and more especially conditioned, and notwithstanding that the round of function would seem to be a fulfillment of the demands of its individuality, still the measure of complete endowment is not exhausted. The vital inherency of the mass still impels it to a differentiation of aspect, made observable by traces of internal organization and enhanced functional capabilities. The fullness of impress is shown by a condensation of the granular mass in certain portions of the inter-

nal area, which results in a centralization of the living force, and enhancement of potentiality, looking to reproduction and perpetuation. This centralized spot forms the nucleus of the cell or corpuscle. Other points are apparent which have been supposed to be vacuoles, but probably are similar centralizations of the molecular mass—which may be deemed the centres of subsequent new departures.

I said that the monera live, feed and grow. We have seen how they advance to a somewhat higher grade. Their destiny is still onward, and the changing phases of its evolution presents features still more curious and interesting. Under the condition of satiety, and having no longer any necessity for food, it retracts its so-called pheudopoda, or false feet, and assumes a globular, stellar, lunar, elliptoid, or other characteristic form, preparatory to reduplication or propagation. An immense variety of these interesting objects may be viewed under the glass, and hours of delightful study may be given them. From a purely physical stand-point these present the fourth stage of entity. First, the atom ; second, the molecule ; third, the granule ; and now the cell or corpuscle. This, the fourth condition, becomes the first in physio-morphological fixation, in which is embodied the full impress of type and destination. The monera, amœba, and cell or corpuscle, as before stated, have their origin in primitive albumenoid substance, organic mucus or slime.

Oken, the celebrated German philosopher and biologist, makes this assertion : “Every organic thing has arisen out of slime in different forms. This primitive slime originated in the sea from organic matter in the course of planetary evolution.” Thus is the force of solarization made tangible in organic bodies, and which in their turn become the medium of receptivity and diffusion of impress.

While the monera live, feed and grow, they consist of mere lumps of slime. Bear in mind, now, this condition of primogenesis, for herein is taught a lesson which embraces all that pertains to the organism of the highest order. The functioning of our own bodies is but the integration and disintegration of these primate elements. We are made up of corpuscle interposed upon corpuscle, and the tissues and organs are but differentiated aggregations of the same simple forms. They generate and fulfill the purposes of generation ; they exist and cease to exist as functioning bodies—leaving a progeny to work out the final destiny of their being.

“And so from hour to hour we ripe and ripe,
And then from hour to hour we rot and rot,
And thereby hangs a tale.”

As a whole, then, we are but lumps of slime ; differentiated masses of protoplasm, identical only with the lowest order of creation. This is not necessarily an humble declaration, since the essence of the cell-life is as far beyond our power to comprehend as is the genesis of thought which stirs the world of mind in the realm of our highest existence.

Haeckel, the celebrated biologist, declares himself amazed at the inconceivable delicacy of this albuminous material, and is filled with wonder and astonishment when he contemplates the power of its potentiality ; and yet, in the face of this concession, he vacates the lofty position of his attainment, and boldly avers that the subtle mysteries touching descent and transmission are fully explained in a purely mechanical and purely monistic sense. And the great Virchow says of these problems : "These are the great problems on which the human mind can measure its strength."

While yet, then, we may follow the processes of evolution as witnessed in the lowest order, we do not necessarily argue the conflicting hypotheses regarding the origin of life. No demonstration has as yet proved the theory of spontaneous generation, therefore conviction must still rest upon the interference of a supernatural agency—but which, too, lies beyond the pale of physical consideration. Darwin's finality is this : that "probably all the organic beings which have ever lived on earth have descended from some primordial form, into which life was first breathed by the Creator."

When we state that there is no stillness, we imply the existence of a force superdominant over the phenomena as they for the time being are presented, and therefore any condition of homogeneity becomes unstable, as tending toward that of variation or heterogeneity ; and the very existence of a superdominant force also implies progression in the changes thus induced. Retrogression argues the withdrawal of influence and the subsidence of power ; and this is never evidenced only in conditions of isolation, when the apparent loss is transferred to other activities, which are thus made more favorable to the processes of evolution and development.

Instability, then, is stamped on everything in nature ; and the living presence, as it comes from a source inexhaustible, is all-sufficient to promulgate the preordained destiny of all that is possessed of the vital endowment.

Let us press our inquiry further, and we shall be inclined to question the possibility of any condition of perfect homogeneity, since, if we example, for instance, a globule of water, we find the molecules of such

globule differentiated in capability as they are acted upon by varied external influence. The peripheral molecule finds its position by a force not precisely the same as that which causes another to seek its place at the centre of the mass ; and this at the centre becomes, in its turn, qualified by the environment to which it alone is subjected. This distribution of influence bestows upon each, therefore, the advantage of its own specialized conditions.

This fact teaches us that differentiation is the law of nature ; and it is moreover made glorious to us, in that in the fullness of time—when the heaven shall depart as a scroll when it is rolled together, and every mountain and island are moved out of their places—we, in the transition to that higher life, shall be freed from the behests of law and the bonds of materiality, and shall be clothed upon with a vesture of light, which is indeed the true life. The influx of vital energy is thus propagated through forms successively advancing toward the true ideal, carrying with them to the end the type of unerring heredity, whether that be corporeal or spiritual.

20th ANNUAL SESSION
OF THE
AMERICAN DENTAL ASSOCIATION.

HELD AT BOSTON, AUG. 3D, 4TH, 5TH AND 6TH, 1880.

The Twentieth Annual Session of the above Association was opened in the hall of the Massachusetts Institute of Technology on the morning of August 3d.

The President (Dr. L. D. Shephard, of Boston), in opening the proceedings, said: Gentlemen of the American Dental Association : I have no address to offer you this morning ; I have only to informally welcome you to-day to Boston, and I do so with very great pleasure, because the number who have met together is very large, compared with the number that is generally seen at the opening of the session. I welcome you to Boston—to a second edition of the American Dental Association in Boston, the previous meeting having been held here fourteen years ago. The American Dental Association is a national Association. It meets in various sections of the country, and no section apart from the more cen-

tral section can claim its visit oftener than once in a dozen years or so. When the subject of a place for meeting has come up in previous years at various times, the remark has been made that we had a good time in Boston in 1866, and the question has been asked—"Don't you want us to come again?" I have always made the reply that we should be very glad to have the Association come to Boston again so soon as it seemed wise and best to the members, but we did not propose to use any arguments or influence to induce them to come earlier than the interests of the Association called for. Last year the sentiment seemed to be unanimous, and I am called on to-day to welcome you cordially to this city. As New England was the missionary ground so far as the national Association was concerned, and as it is so long since the last meeting was held here, it was but right that it should meet here again now, if only for the sake of gathering in many of those who had fallen off, or those younger ones who had risen up, and who will one day be the bone and sinew and the great budding force of our profession. We now welcome you here, and it is a particular pleasure to me that I can be the spokesman as your presiding officer. We have been mindful of the fact that in the past this Association has been a working body, and has not given much of its time to convivial entertainments and things of that kind. We should have been glad to take up more of your time than we shall ask for, for outside entertainments, but we have been constrained only to ask for two afternoons. To-morrow afternoon the dentists of Boston extend their courtesies to the American Association and the wives of the members, and offer them a drive about the suburbs of Boston. This drive, as you will be informed by the cards, is to start at three o'clock, and it will occupy about four hours. We will show you then, not the masonry of the water-works, but that of which Boston is particularly proud—its rural country in easy access of the city; its suburbs, which contain the residences of many of its citizens; we will show you, not its public monuments, nor its parks, but the private houses of many of its people. On Thursday afternoon, by the courtesy of the Mayor and the city government of Boston, we shall have the pleasure of offering to you—what I think has never before been extended to our Association—the official recognition of its worth, intelligence and usefulness by the city. The invitation from the Mayor is to an excursion down the harbor to one of our civil institutions, and an entertainment for the inner man in the shape of a luncheon. The Mayor expected to have been here to-day to give this invitation in person, but he has other important engagements elsewhere, and I am happy to be his mouth-piece in extending to

the Association this invitation to partake of the hospitality of the city. (Applause.) Otherwise than these two excursions we shall not encroach on your valuable time or on our scientific proceedings, but in them we hope to show you the country above and the harbor below.

I extended my thanks to you a year ago for your kindness in electing me to the office of President; I then said that I considered the Presidency of the American Dental Association was the proper goal for the ambition of any member of our profession. Devotion to the Association, constant and never-wearying labor for its advancement and the advancement of the profession, is the proper duty of every member, and it is right for him to look forward to receive such a public recognition of his labors. I shall not find any honor in the profession or out of it which is so agreeable as to have been elected as the President of the American Dental Association. (Applause.) In the discharge of my duties I will bespeak your hearty assistance and co-operation. The presiding officer is but a servant of the body, to catch its will and do it for the saving of time and the expediting of the business of the body. He is not the master, but the servant, and only so far as the members unite with him can the work be satisfactorily carried out, by preventing waste of time over trivial matters, and by devoting it to a discussion of those subjects which the majority of us desire to discuss. Any mistake I may make will not be the result of any lack of desire to serve you and to aid in expediting the business, paying due and proper regard to the rights of every man. (Applause.)

It was decided to dispense with the reading of the minutes of the last session, as they had already been presented to the members in printed form.

The report of the Committee of Arrangements was adopted.

On the motion of Dr. H. J. McKellops (St. Louis) it was resolved to accept the invitations presented by the President.

THE PUBLICATION COMMITTEE.

Dr. GEO. H. CUSHING read the report of the Publication Committee, which showed that 300 copies of the Transactions of last year were published and distributed to all the active members who were entitled to receive them, also the honorary members and dental journals. The balance sheet showed that the cost of printing, postage and sundries was \$274.85. The Transactions might have been ready ninety days earlier than they were, but the Committee did not feel justified to commence printing them till enough money was collected to pay the bills.

AMENDMENTS OF THE CONSTITUTION.

Dr. T. L. BUCKINGHAM raised an objection to one clause in the Constitution, which provided that the papers read before the Association should be the property of the Association and should not be published anywhere else. He considered that if members read papers before them that were valuable, they should not seek to restrict their publication in any journal that wished to present them to its readers.

Dr. G. R. THOMAS (Detroit) desired to know whether the rule as it now stood was intended to be so enforced that no other publication should be allowed to use them at all. He felt that it was only proper that the works of the Association should be spread abroad as far as possible, and if only the members had access to them their influence was unnecessarily restricted. He moved an amendment to the Constitution as it at present stood, to the effect that the dental journals be at liberty to use such portions of their transactions as they may wish.

Dr. G. A. MILLS (Brooklyn) seconded.

In answer to a question from Dr. W. H. Goddard, the President said that the Constitution read at present as follows: "Every paper received by this Association and all plates or other means of illustration shall be considered the exclusive property of the Association, and shall be published for its exclusive benefit."

Several members asked for an explanation of that portion of the Constitution just read, and the Secretary (Dr. Geo. H. Cushing) said that the journals were at liberty to publish the transactions, or any part of them they liked, from the official issue of the Society, but they were not allowed to publish the papers in full before they had been published by the Society. They were allowed, however, to make abstracts from them.

Dr. T. L. BUCKINGHAM (Philadelphia) moved that from the clause quoted the second "exclusive" be struck out. Seconded.

Dr. W. H. GODDARD (Louisville) opposed the motion. He did so because some of those members who had allowed their subscriptions to lapse had asked what was the use of paying \$5 a year, the fee demanded of each member of the Association, when they could get the transactions in one of the dental journals for \$2.50 a year.

Dr. T. T. MOORE (Columbia, S. C.) thought that Dr. Goddard had drawn the point a little too fine. While it might be true that many dentists gained some valuable information from the reports of their proceedings which appeared in the journals, yet more than double that amount of experience was gained by those who attended the meetings. He took

the body to be liberal-minded and he would have them show to the world that they were that. The last speaker looked at the question solely in a money-making light ; but they were not a money-making body. If they had sufficient money to keep the Association going and pay expenses, what need had they for anything else? The meetings were necessarily held at points a long distance from many of the members' homes, and it was difficult, for many reasons, for some of them to attend. He felt that when the papers had been read and the discussions engaged in, it was right that the press should be allowed to use them, not merely for the benefit of the American Dental Association, but for the benefit of the dentists throughout the world.

Dr. CUSHING (Secretary) said that one year a number of the papers were published in the dental journals long before they were published in the official transactions of the Society. Some of them were already in type, and were read from the advance sheets of the dental journals in which they appeared the next month. That was deemed by the majority of the Association as not warranted, and since then the journals had been informed that they must not publish full reports of the papers. They sent their own reporters to the meetings to report the discussions as fully as they pleased, but they regarded the papers as the property of the Association, and therefore should only be published in full by them.

The resolution of Dr. Buckingham was then carried. That of Dr. Thomas was withdrawn.

A MOOT POINT.

A letter was read from Dr. Buirge, of San Francisco (who sent in his resignation as a member of the Association three years ago), asking to be again admitted to membership of the Society. After a long discussion, in the course of which a number of resolutions and amendments were moved, it was resolved that Dr. Buirge be informed that he could only be readmitted in the way that members were ordinarily admitted.

The meeting then adjourned.

EVENING SESSION.

The meeting was called to order by the President at 7.30 P. M.

A RESIGNATION.

A letter was read from Dr. R. F. Hunt, Washington, tendering his resignation as a member of the Society. Accepted.

PROPOSED NATIONAL ASSOCIATION.

On behalf of the committee appointed to consider the advisability of forming a national body of dentists, Dr. A. W. Harlan said that after fully discussing the matter and conferring with the other committees on the matter, they were of opinion that it would not be wise or expedient, or materially contribute to the good of the profession, for the American Dental Association to assist in any way in the formation of the proposed new organization. If members of the profession wished to be united under one banner, the course was open for them to join the American Dental Association. In that way no section of the country was denied the privilege of being represented in a truly national body. The committee further believed that the Association possessed all the necessary qualifications of a national body, and they recommended that no action be taken in the matter, for to do so would tend to impair its usefulness.

The report was adopted unanimously.

REPORT OF SECTIONS.—SECTION SIX: PATHOLOGY, THERAPEUTICS AND MATERIA MEDICA.

Dr. F. M. ODELL (New York), Chairman of this Section, called on.

Dr. W. N. MORRISON (St. Louis), who said he had not prepared any paper to read to the members of the Association, but would state, as briefly as possible, the circumstances of two cases that came under his notice a short time ago. The first was that of a young gentleman who came to him complaining of a great deal of pain and heavy feeling in the right cheek-bone. He attributed it to a diseased tooth. On examination, however, the teeth were found to be all in a good condition and only one of them had a filling—a second molar of fair size, which was filled with gold. Supposing that the pulp was the cause of the trouble, he removed the gold filling and proceeded to drill toward the pulp canal, expecting to find the bad pulp. He had only drilled a short distance, however, when he found that it was very sensitive. He then filled the cavity with gutta-percha. On the following day the patient returned. His face was swollen considerably, the pain was very acute, and he said that he had slept but little during the night. Still there were no parasites in the tooth. On his coming again the next day, he said that by blowing his nose violently he had started a discharge from the nostril on the same side that the tooth was. There was a copious discharge at the nostril, and from that day the pain ceased and the patient got entirely well.

The other case was that of a lady who had two dead teeth on the same side—a second and first molar. Both the pulps were dead. Her case was

not so marked as was the other ; there was no swelling, but a heavy feeling on the side of the head, which came on when she went to bed. The natural opening into the antrum was established by her stooping to pick up a pin from the floor, and she said that a quantity of fluid came through her nostrils of the consistency of machine oil. From that time she was cured. Undoubtedly there were a great number of such cases where there were enlarged cheek-bones and where the mucous membrane was in an unhealthy and thickened condition. They were often treated by specialists, aurists and others very superficially, instead of trying to get an injection into the antrum and wash it out thoroughly. Dentists often passed over any disease of the antrum as being beyond their reach, and really they were not responsible for a great deal of the trouble they found.

SUPPLEMENTARY REPORT ON THERAPEUTICS.

The following is a summary of a paper read by Dr. C. A. Brackett, of Newport, R. I., under the above title :

While it had been said that the Association should address itself mainly to the discussion of broad general principles, rather than matters of detail, which should be left to the smaller local societies, it was necessary in the present case to go somewhat into detail. The first of the points which came under the section related to the modification and control of the flow of saliva by medication, with a view to lessen the difficulties and annoyances of operations in very wet mouths. Physicians had for a long while recognized certain effects following the exhibition of belladonna. The *U. S. Dispensatory*, in its edition of 1874, stated that among the first obvious effects of belladonna, when taken in the usual dose and continued for some time, was a dryness and stricture of the fauces and neighboring parts. The leading statement under the head of "Medical Properties" is "the action of belladonna is that of a powerful narcotic." Dr. A. F. Angell, of Newport, R. I., claims that he has found it of the greatest service to allay the flow of saliva, and is very grateful to the patient. The second point to which he (Dr. Brackett) would call the attention of the Association was the liability of producing injury to the teeth by the acid nature of oral mixtures which may be administered thoughtlessly or carelessly. His attention was called to this matter a few days before by the case of a gentleman who came to him, whose mouth had for many years been under the care of one of the best practitioners of the country. He noticed a broad, ragged excavation in the enamel on the labial face of the right superior central incisor. This he ascertained was the result of tannic acid which he had applied to his diseased gums. On

testing with litmus paper a specimen of tannic acid, he found the reaction so marked, that the conclusion that it was the active agent in the etiology of the condition present seemed inevitable.

He had made a number of tests of a few of the agents dentists were constantly using in the mouth and he would put the result before them. The slips of litmus paper (produced) were dipped in the materials named and carefully dried before being placed in the neighborhood of each other. The water with which the solutions were made was rain water, and tests of it proved it to be free from acid. (The specimens of litmus paper that were used in the tests were affixed to sheets of paper and handed round to the members of the Association.) Magitot said that alum destroyed with great energy the elements of the enamel. Both tannic acid and alum were used so commonly and so freely in the mouth that the need of caution in regard to them was not imaginary. Alum was also an ingredient in some of the tooth powders of questionable character. Specimens of the effect of phosphoric acid and of Professor Wetherbee's dental obtunder were given, showing that the latter gave a deeper tinge to the litmus paper than the phosphoric acid. Salicylic acid and tincture of myrrh were also exhibited in the same way. Referring to the salicylic acid, the speaker said that it was recommended to be used for canal fillings. He tried it for the purpose, and the results were gratifying so far as the subsequent comfort of the tooth was concerned ; but having occasion to remove two or three canal fillings of the kind, he found so much decay had taken place during the interval that they had been so filled, that he had entirely renounced its use for the purpose. Specimens of glycerine, absolute alcohol and tincture of aconite were found free from any acid reaction, but combinations might be acid when their component parts were not. Much more might be done in similar experiments, but enough had been said to show that many of the supposed remedial agents often used in the mouth by dentists were actively acid.

The next point to which the speaker had to refer was that of prevention of pain in performing dental operations. A very large part of what had been considered necessary pain in dentistry had come from the excavation of cavities, hence there had arisen many attempts at prevention and the alleviation of that pain in years past. The newly published idea in the treatment of sensitive dentine was that they should supplement the mechanical means of dryness with chemical means of dryness—*i. e.*, obtundent materials should be used which have such an affinity for water as to take it from the dentine. That was the broad general principle, and the

details may be worked out in a general way. Prominent among the substances which have the necessary affinity for water, and are in all respects harmless, are glycerine and absolute alcohol. With one or the other of these is combined tannic acid, chloride of zinc, tincture of aconite root, etc. The speaker then referred to the advocacy of Dr. Shumway of the use of absolute alcohol or glycerine as obtundents, which he had used for several years for that purpose. He (Dr. Shumway) claimed that the preparation known as "Näboli" was developed from statements of his concerning the use of these materials made directly and indirectly to persons who had since become prominent in bringing out "Näboli." Dr. Davis, of New Bedford, Mass., also claimed to have discovered the essential ingredient in "Näboli," and to have communicated the same to the President of the "Dennett Dental Näboli Co." Dr. S. J. M'Dougall, of Boston, writes that he had found a preparation for obtunding sensitive dentine. He supplied several other dentists with his combinations at different times, without, however, revealing their ingredients, as early as 1878. The explanation of these apparently conflicting statements was undoubtedly the result of different men working independently, and in their own way arriving at similar results. Professor I. J. Wetherbee, of Boston, also gave the formula of a combination which he had since placed in the market under the name of "Wetherbee's Dental Obtudent."

Recently there had been organized in New England a company claiming to be the owners of a valuable patent-right for obtunding sensitive dentine. The way in which the company had come into existence, the nature of its claims, and its ability to substantiate them, were such that it failed to secure the respect of the better portion of the profession, who have acquired the most knowledge concerning it. An investigation of the character of the Dennett Dental Näboli Co., and the validity of its claims, was made by Dr. Dudley, of Salem, Mass., and he had laid the results of the investigation before the Massachusetts State Dental Society. That body promptly, emphatically, and without a dissenting voice, passed resolutions adverse to the claims of the corporation. Among other matters presented by Dr. Dudley were the results of an analysis of "Näboli" made by Prof. B. F. Davenport, of the Massachusetts College of Pharmacy. It was found that the first of four bottles (some of the contents of each of which had to be applied to the cavity in the order of their number) consisted, essentially, of sweet oil; the second, sweet oil with a little tannic acid; the third, glycerine and much more tannic acid, and the fourth, chloroform. The contents

of all the bottles were scented with otto of rose. A copy of an analysis made later by Prof. Babcock said that the first bottle contained petroleum oil, perfumed and incorporated with a very small quantity of tannic acid; the second was like the first, except that the proportion of tannic acid was somewhat greater; the third consisted of glycerine, holding in solution tannic acid, but in considerably greater proportion than in the first or second. The fourth contained what was known as wood naphtha or methyl alcohol. In view of all that is now known concerning dental obtundents, the haste which many practitioners have made to bind themselves under a multiplicity of conditions, and become licensees of a corporation, with no better claims for exacting tribute than this, seemed hardly wise.

DISCUSSION.

Dr. Andrews (Boston) remarked that there would be found in the mouth acid which would affect the litmus paper as much as the things that Dr. Brackett had experimented on. Acid might be found to exist in a cavity, and it had been his practice to moisten the cavity with a little bi-carbonate of soda in water, and thoroughly get rid of the acid.

Adjourned.

(To be continued.)

ANNUAL MEETING OF THE NATIONAL DENTAL ASSOCIATION (LATE SOUTHERN).

The annual meeting of the above Association was held at Brown's hall, West 33d Street, New York, on Wednesday and Thursday, the 11th and 12th of August. The President (Dr. J. B. Patrick, Charleston, S. C.) occupied the chair.

THE PRESIDENT'S ADDRESS.

GENTLEMEN OF THE NATIONAL (LATE SOUTHERN) DENTAL ASSOCIATION: I congratulate you that we have been permitted to assemble once more in a representative capacity, for the purpose, not only of interchanging thoughts concerning the progress of our profession, but of renewing the pleasant social relations that have proved such a bond of union between many of us in the past. Of the importance of such a national organization as we contemplate forming there can be but one opinion. Without interfering with the lines of de-

marcation that surround the local societies, or seeking to disturb whatever of good may emanate from their existence, our present effort should be to consolidate all interests that are mutual and stimulate all purposes that have a common object. Of jealousies among us there are none, but of high aspirations there are a multitude, and whichever society we may belong to, we desire to stand shoulder to shoulder in achieving the grandest results that may be commanded by unity of thought. In the promulgation of this thought we shall find our main strength; for it will flow from a centre whose interwoven fibres are in themselves strong, and whose forces need only to be distributed through the arteries of one homogeneous body, to obtain all the possible benefit that can enrich our profession. Permit me to say that this I regard as one of the largest elements of our success; for while each State may in time possess its local society—and the more the better—each will contribute of its membership to the grand National Association that we have in prospect, and thus through attrition enlarge the field of our experience and supply from many sources food for our instruction. The necessity for such a concentration of useful influences must be apparent to even a superficial observer. If we scrutinize the records, we find scattered through them information of no inconsiderable value, and yet it might be made doubly so if it could find voice through a national vehicle, instead of being scattered like oases in the broad Sahara of dental literature. Do not let me be misunderstood. I bow my knee in tribute to the noble army of authors and essayists in our profession, who have done and are doing so much to disseminate knowledge; but you will concede that where the gleaners are so numerous and the scope of discovery is so wide, there is a greater need than ever that as a community interested in every new fact bearing on our science, we should be enabled to avail ourselves of every step in advance, and this is one of the advantages that will accrue from our national organization. . . .

Our brain-workers are not idle, and our tablets are scored all over with the intellectual victories that have been won by the members of the dental profession, in their encounters with the inexperience that characterized to a considerable extent its incipiency as a profession less than forty years ago. . . . There are those who remember how the tooth-puller, the barber and the country peddler went almost hand in hand, and there was no thought that we should live to see the delicate and effective appliances now in use for preserving and perpetuating the teeth and removing the evils of hereditary growth. Art has, however, changed the then existing conditions. The freaks of nature have come within the

domains of scientific mechanism, and the degeneration caused by luxury or vice is obedient in its yielding to the exact law through which we enforce a return to nature and the designs of nature's God. While a few years ago the dentist was regarded as little better than a mere artisan, whose knowledge did not extend beyond his simple tools of trade, to-day we find him recognized as the member of an honorable profession, interlinked with every other, connected with the science of anatomy and physiology, and a contributor to and an important adjunct of the art of healing. It has been well said that it requires greater professional skill to properly handle the teeth than it does to set an arm or extract an eye. This may seem to be a broad assertion ; but there are many who have at various times in their experience been brought face to face with cases in which the nicest judgment of the surgeon, the most exhaustive skill of the anatomist, and the keenest touch of the operator were required to produce the effect desired. . . .

It is the universal testimony that dentists nowadays operate with greater delicacy of touch, affording less inconvenience to the patient, and leaving behind fewer of the after traces of treatment, that were observable in former years. . . . The suggestive instructions of the collegiate course have more or less exercised a predominating influence upon the profession. Some among the students have found occupation for their talent in the perfection of artificial teeth ; others have made as a specialty contrivances for the correction of irregularities and the removal of deformities ; many have devoted themselves simply to the art of filling and making perfect the teeth, while a few, animated by a noble ambition, have sought to cover all these aims, and be prepared, besides, to stand in the forefront of their profession, ready to respond to the grandest requirements of the science, and with their knowledge of constitutional or theoretical treatment, when need be, aid their professional brethren in other departments of the healing art. . . . Brought as we are into daily communication with father, mother and children, frequently covering more than a generation of growth, it is possible for us, both as individuals and as an organization, to teach them somewhat of the harmony of life that is demanded by physiological law, and the inevitable lesson that follows disobedience. I have no hesitation in saying that the next generation will witness a greater abnormality in dental development than we have yet seen. It is for the simple reason that there is a greater tendency to nervous and cerebral disease, resulting from fast living and injudicious food. It shows itself particularly in the precocity of children. It is in my experience

that in a majority of cases the precocious child has a mouth full of fangs, and a dental organization throughout that is hereditarily bad. To us belongs the task of interposing our skill as a barrier to the encroachments of these and all other forms of dental disease. . . .

Our convention promises to be an eventful one. You are in person the embodiment of the growth of our profession, and you have reflected honor on its shield. Science in your hands has suffered no corruption, nor has it been permitted to stagnate. While there may have been a long interval between the seed and the timber, we have already seen the bud and flower and fruit. We are progressing step by step toward still higher planes, with the consolation of knowing that what is gained by one man is invested in all men, and is a permanent investment for all time. . . .

PROPHYLAXIS OR PREVENTION OF DENTAL DECAY. BY DR. C. C. PATRICK,
CHARLESTON, S. C.

The efforts of those in charge of the dental organs have been directed more toward limiting the ravages of decay after its appearance than the adoption of a thorough and systematic method of preserving the teeth. . . . Man was created perfect, and as long as he followed the laws and partook only of the good things Nature provided, his several organs performed their functions in such simple regularity that the diseases which now afflict us were almost unknown. . . . The cutting of the teeth, which now brings grief and distress to almost every household in civilized countries, caused no fear in the simple societies of olden times, and does not seem to be fatal in the barbarous or rural tribes of modern days. Though man in civilized countries of to-day may not be more prone to destructive constitutional diseases or have worse teeth than the luxurious Persians, Greeks and Romans of old, it is only in the frugal, nature-loving country people of modern times that we can hope to find an approach to pristine excellence and perfection. The child of nature is always perfect; that of luxury and vice a caricature. . . . As surely as man transgresses the laws of nature in any age or clime, will he pay the penalty. As surely as he discards the most important and nutritious elements of food, and then fixes on what remains in all manner of unrecognizable forms, and bolts it without first putting the system, by exercise, in condition to assimilate it, will he destroy his originally perfect organism, bring disease and misery on himself, and require the aid of physician and dentist. . . .

The teeth are so intimately connected with the general system, sym-

pathizing with, affecting and being influenced by all changes in it, that we could not hope to succeed in benefiting them by merely local attention, nor would the best constitutional treatment at this period make a perfect set of teeth. The health and strength or disease of them is implanted so early, that it would be the height of folly to wait until birth to try to build a perfect structure on a weak and imperfect foundation. Treatment, to be effective, should be from the very beginning. . . . The physician now recognizes the intelligent dentist as dealing with a specialty of his noble profession, and is no longer averse to consult with him or to give to his care, cases which more strictly belong to the province of dentistry. There are here no conflicting interests, no professional jealousies, to excite, and the union can only result in the greatest good to mankind, and be of incalculable assistance in the endeavor to preserve the teeth from decay. How else could we hope to successfully combat the evil influence of disease, or build up and restore to health weak and broken-down constitutions? It is therefore incumbent on us to work faithfully and conscientiously together, and in order to have our efforts crowned with success, we must commence our treatment with the woman in the earliest stages of pregnancy. We must frequently examine her mouth, and see that all particles of tartar and other harmful bodies are removed, and that the secretions are in a normal condition. The greatest cleanliness should be enjoined in the mouth, and at the same time she should receive a generous diet and a great deal of open air exercise. Her food should abound in bone and teeth-producing phosphates. . . . The same care regarding exercise, diet and attention to the oral cavity should be shown her after delivery. Should her milk be of any but the best quality, it should be immediately stopped, and goat's, cow's, or still better, that of a healthy woman of sound parents. supplied. . . . Should the offspring inherit a constitutional taint, or develop dyspepsia, a most thorough systemic treatment should be instituted. When nature, by the eruption of the temporary teeth, denotes that a more solid and substantial diet than milk is necessary, food with a large percentage of the phosphate of lime should be given—such, for instance, as barley bread, oatmeal, cracked wheat and unbolted flour. Too much stress cannot be laid on the abuse of candies and sweetmeats, for though they may be retained in the mouth without serious injury, they destroy the digestion, and thereby the teeth. Fresh air, exercise and great bodily cleanliness are of as great importance to the young as to the old. The child should be taught to brush the teeth as soon as it can handle the brush, and previous to this the mother or nurse should do it.

The mouth should be frequently examined, particularly after acids or strong medicines have been used. All broken-down, deciduous teeth, and all impurities injurious to the permanent teeth should be removed, and the mouth rendered healthy. Crowded and irregular teeth should be filed, extracted, or brought to proper position in the arch, as the judgment would dictate, and, in short, nothing should be left undone by physician and dentist to remove all causes, constitutional or local, favoring, in the slightest degree, decay.

DISCUSSION.

Dr. S. J. COBB (Nashville, Tenn.) expressed pleasure at hearing such a paper as Mr. Patrick had favored them with. It dwelt on the point they held uppermost in their minds, namely, the prevention of disease. They had not yet succeeded in educating the people up to a proper appreciation of the value of their teeth. The whole medical profession the world over should pay more attention to the prevention of disease than they did. They too often thought of nothing else but the proper treatment of disease after its development. Dentists were looking to its prevention altogether, as much as to its treatment. He hoped that all young men would throw their interest into the matter and follow the precepts contained in Dr. Patrick's paper.

THE EFFECT OF MERCURY ON THE HUMAN SYSTEM. BY DR. J. B. PATRICK.

A little patient who came under my care recently presented the signs of marked ptalism. There was some fetor of breath, sponginess of the gums, etc., which I at once ascribed to mercury. Doubt, however, was expressed, as the child had taken no calomel, until I discovered that it had been playing with a fragment of a broken mirror, and I felt convinced that such, in all probability, was the source of the trouble. It was objected to by some that I indulged in a mere visionary speculation, for though it was well ascertained that the child had had the piece of glass in its mouth, and had possibly swallowed the coating of amalgam as it was scraped off by its fingers, still it was maintained that probably there was no mercury in the amalgam, and if any, not in quantity sufficient to produce such an effect. Not satisfied with this objection, and desirous of ascertaining whether this particular piece of mirror contained any mercury, I was fortunate, through a friend, in obtaining an analysis of the metallic compound removed from the glass, who found that it contained 13.84 per cent. of mercury.

I am disposed to attach importance to this question, since a general

impression exists that whatever of mercury is used in the fabrication of glass mirrors, is in such combination in the amalgam that it is not so dangerous as a popular prejudice affirms ; and again, since resort has been had to silver instead of mercury, in some manufactories, the idea is also prevalent that these glasses are no longer covered with mercury. That injurious and dangerous effects arise from the specific action of this metal in the manipulations to which it is subjected in these glass mirror factories, is impressively brought to mind when we recall the hygiene of various trades, and the ascertained dangers which beset artisans in their workshops. Familiar facts may here be stated which bear at once on the question. The ascensional force of mercurial volatilization is not great—indeed, not more than one foot and a half, owing to the weight of the metal ; yet through air currents the workshops become ultimately so surcharged with mercurial fumes, that the workmen in these factories are engaged scarcely more than six months at the trade before the known cachexia becomes apparent in ulcers about the buccal, nasal and tonsilite regions. To guard against the sufferings incident to this occupation various means have been resorted to, the most efficacious of which is Meyer's plan of sprinkling the floor over night with ammonia. Silver now being generally used as a substitute for mercury in this business, is such an improvement that all danger to the artisan will eventually be entirely removed.

THE FUTURE OF THE ASSOCIATION.

The President called the attention of the members to the fact that a new association was being formed, and he thought it was open to discussion as to what should be the future of their Association. Should they disband, or be known as District No. 2 of the National Association ?

Dr. CHISHOLM (Tuscaloosa) said he did not think that it would meet with the approbation of their Association to disband at present, for they did not know what would be the future of the new association. He thought it would be better for them to preserve their identity until some other association was able to absorb theirs.

Several members took part in the discussion, and it was ultimately resolved that the name of the Association be changed to that by which it was formerly known—namely, the Southern Dental Association.

MISCELLANEOUS BUSINESS.

It was resolved that the next meeting be held at Ashville, N. C., on the last Tuesday of July, 1881.

The following officers were elected for the ensuing year: President, Dr. V. E. Turner, of Raleigh, N. C.; First Vice-President, Dr. L. D. Carpenter, of Atlanta, Ga.; Second Vice-President, Dr. C. C. Patrick, of Charleston, S. C.; Third Vice-President, Dr. M. A. Bland, of Charlotte, N. C.; Corresponding Secretary, Dr. J. P. Holmes, of Macon, Ga.; Recording Secretary, Dr. E. S. Chisholm, of Tuscaloosa, Ala.; Treasurer, H. A. Lowrance, of Athens, Ga.; Executive Committee, Drs. T. T. Soore, of Columbus, S. C.; J. H. Coyle, of Thomasville, Ga., and Dr. E. L. Hunter, of Enfield, N. C. The new officers were immediately installed, after which the Association adjourned.

TRANSACTIONS OF THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, April 5th, 1880.

ADJOURNED DISCUSSION ON MR. OAKLEY COLES' PAPER ON "DEFORMITIES OF THE UPPER JAW."

(Continued from page 325.)

The PRESIDENT said: I have made an abstract of the paper for the purpose of introducing the subject, but as I feel sure you have all read the original carefully, I don't think I need read it. Mr. Coles first of all described his mode of measuring the jaw by drawing a triangle formed by a line drawn from the centre of the distal surfaces of the second molars across the palate, and by lines drawn from the extremities of this base to the space between the two central incisors; another line was then drawn across the mouth from one second bicuspid to the other. Each of these lines was accurately measured, and these measurements were first of all used to define the sizes of the jaws of different nationalities, and afterward to define the sizes of deformed jaws. He defined them so accurately that he thought it was desirable to give them new names, according to their sizes and peculiarities of form, and he gave them the seven names which I have no doubt you remember. At the

conclusion of his paper he also gave you his idea as to what were the causes of these irregularities in the form of the jaws. Dr. Walker having proposed the adjournment of the discussion, I shall call upon him now to open the debate.

Dr. WALKER said : Mr. President, my remarks will be few, hoping that others who take a deep interest in this subject will give us their views upon it. Our best thanks as a Society are due to Mr. Oakley Coles for the production of his paper, read on the evening of February 2d of this year. This very original paper is interesting to us from three points of view. Mr. Oakley Coles has endeavored to define in clear lines a fully and well-developed maxilla, and also the various types between the well-developed and the ill-proportioned, giving to each subdivision a distinctive name. Secondly, he has endeavored to show how the ill-proportioned maxilla have received the impulse of development. Thirdly, his deductions all point to the care which parents and surgeons should take in youth to prevent the growth of a maxilla with a tendency to prognathism. It is a paper which you will excuse my referring to rather largely, as, if we may judge of other men's brains by our own, it is impossible, after hearing a paper of this sort once read, to carry all the points accurately in our mind. I, therefore, with your permission, will refer to a few paragraphs and make observations upon them. I will leave to others the triangles and the character of the measurements, and will take up the paper at p. 128.

Mr. COLES there says : " My first assertion is this, that the deformity known as *intermaxillary prognathism* is the result of a force operating on the intermaxillary bone, such force originating in the body of the sphenoid, and being transmitted by the intervening nasal septum. (I may at once say that when speaking of *force* I mean a direction of growth in a given line of such energy as to overcome the resistance offered to it by surrounding structures.) " My comment on this passage is in the nature of an inquiry—What "force" may we understand Mr. Oakley Coles to refer to? Does he mean that there is a growth of brain substance behind the sphenoid bone, which forces the sphenoid bone bodily forward? or does he mean hypertrophy of the sphenoid bone itself, producing displacement of all the parts in front of it? or does he mean that the articulation of the sphenoid bone is entirely different in character in such skulls as he alludes to? Then, at p. 129, Mr. Coles goes on to say : " The foregoing assertion is based upon the interpretation of the following observed facts : First, the true case of intermaxillary prognathism will have a long, thin nose; secondly, this

long, thin nose is not observable during the first dentition, nor is there prognathism, excepting to a very slight degree indeed. Hence we may conclude that the long, thin nose and prognathous jaw are capable of intensification by growth and development during early life." My question on this extract is this—How many cases can Mr. Coles refer us to, in which he has clearly traced this process of growth from youth upward? "Thirdly, it has been shown that the measurement from the inter-bicuspid line to the incisive angle is greater in the prognathous than in the normal jaw; hence it follows that the change from the normal arch occurs at a point anterior to the second bicuspids, while the second bicuspids are known to correspond with the position of the second molars of the milk dentition. Thus it is shown that the prognathism is not of the whole jaw carried forward on a horizontal plane, but is really intermaxillary or alveolo-sub-nasal in its character. Fourthly, it is a simple logical sequence of the process that produces intermaxillary prognathism, carried a step further, during embryonic life, that produces double hair-lip and fissured alveolus." Evidently there are two points referred to here; first of all, that this condition can be watched during the first dentition, though to me this sounds a little contradictory after what we were told just before about prognathism not being observable at this period. And secondly, that Mr. Coles can give us the history of perhaps several cases.

To continue my quotation: "Arguing back from these cases of double hare-lip to premaxillary prognathism, we can come to no other conclusion than that the duration and extent of the force operating upon the premaxillary bone, determines the nature and extent of the deformity that will be produced." Here was another reference to the mysterious "force" which I have not been able to identify. Then, at p. 131, there is another passage which I will read: "From collateral evidence we know that many cases of prognathism are associated with such central lesions as will manifest themselves in the form of idiocy or imbecility; and, further, that the general configuration of the face is ape-like, from its diminishing facial angle and retreating chin; and we also know that in the apes the intermaxillary suture is not ossified till late in life." We wish to ask Mr. Oakley Coles to what "central lesions" he alludes in this paragraph? Another passage, at p. 132, reads as follows:

"It will, therefore, scarcely be straining the argument unduly, if we assume that as man by deteriorations returns to the type of the higher apes, so, by the like process, he will in his method of development be subjected to similar conditions of growth and ossification. I do not, of

course, wish it to be understood that all who have intermaxillary prognathism must of necessity be either idiots or imbeciles, but I desire very distinctly to assert that such a deformity occurring amongst the highly civilized, is a distinct mark of deterioration of stock ; whilst it is differentiated from the normal prognathism of the Hottentots by the diminished interbicuspid measurement of the highly bred skull."

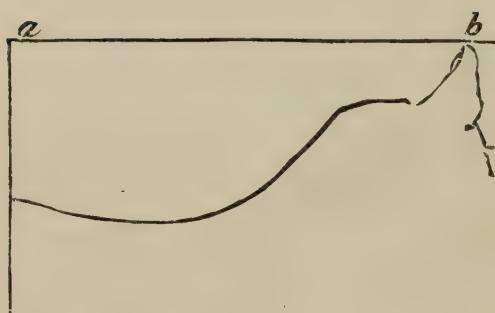
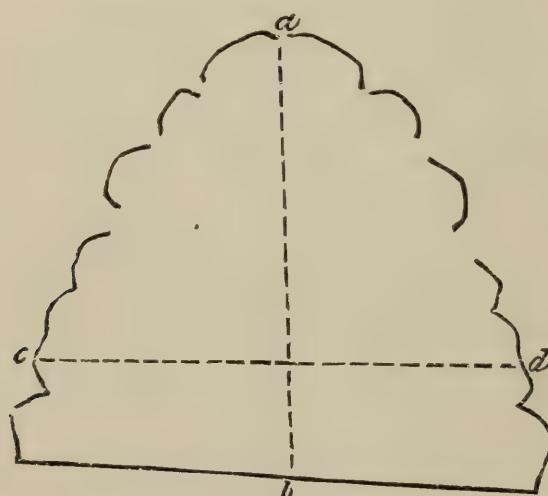
It appears to me that one of the principal points which Mr. Coles wishes to prove, is, that we may be able, by the shape of the jaw, to determine the future of a patient. Evidently he does not mean to say that all those with prognathism must be idiots, but that many of those that are idiots have prognathism. Mr. Oakley Coles, then, wishes us to understand that from his careful observation of the large number of children with whom he has been brought in contact, he can, by the shape of the jaw, at any rate now and then, perceive that there is a probability of idiocy lying dormant in perhaps some of his best patients. If that is his idea, the practical bearing of the paper appears to me to tend to this question : What treatment would he advise the parent to adopt ? Having thought this over, and through the kindness of Professor Flower here are specimens or models of the jaws of men of different nationalities ; and those who are continually in the open air, those who are constantly following either warlike pursuits, or obtaining their food by hunting or fishing, living chiefly outside houses, have jaws which are fully and very largely developed ; the jaws being in most instances by far a larger circle than the aggregate diameters of the teeth they contain ; hence we obtain a jaw with interstitial spaces. If you look at these models and recollect the habits of the various nations to which they belong, you will find that the more they are confined in habitations of any kind or character, the less developed do we find the jaw ; until we come down to an ordinary English model.

To bring back the development of the maxillæ to the type of the early Saxon, what means can be adopted ? First cast away the fashionable dressing of children, allow them free use of all their muscular development, by keeping them in the fresh air of heaven, and granting them such diet as will develop bone as well as muscle—such as breads with bran—unwhitened breads, vegetables, less meat, abundance of milk, pure spring water.

Perhaps Mr. Coles may inform us if he has found benefit in any case by such like treatment.

The SECRETARY then read a communication from Mr. Balkwill, of Plymouth.

Having lately, at the instance of Dr. Hack Tuke, made observations of about fifty models of upper jaws, in order to see if any connection could be traced between the contracted or V-shaped arch and mental deficiency, the best method of making diagrammatic representations of these for reference and comparison was a question for consideration which induces me to make a few remarks upon Mr. Oakley Coles' valuable paper of last month on the subject.



9. Fig. 1. Outline of upper jaw made by outlining model on the paper.

Fig. 2. Section through fig. 1, *a b*. The line *a b*, fig. 2, is the line of the tops of the upper teeth.

Fig. 3. Section through fig. 1, *c d*.

In the first place, the impression is strong that the varieties of form are too great to be properly represented by so simple a diagram as that given by Mr. Coles. The underlying forces and conditions seem too complex and numerous to be so represented, and I should have no hesitation in saying that such a classification must lead to many erroneous generalizations.

We want to see at a glance the angle at which the cutting edges of the centrals meet, the general arch of the teeth, and whether the alveolar margins are full or spare, etc. One point to which attention should be paid, is the symmetry of the curve of the arch of the palate, as taken in vertical section. This is frequently askew, and I fancy I can sometimes detect a corresponding mental obliquity; at any rate, this is a point worth noticing.

An objection to using the alveolar border as a fixed level from which to measure the depth of the palate, lies in the fact that after thirty an exceedingly variable amount of absorption takes place even where the teeth are not removed; and where they are gone much more so, as every dentist is practically aware.

The true fixed level seems to be the plane of the occlusion of the natural teeth.

The foregoing considerations have led me to use the following method of representing any model for future comparison or reference:

Take a little softened Godiva modeling composition and fill up the palatal part of the model full to the tops of the teeth and press it down with a flat surface until this rests upon the points of the teeth; when cold remove and make a vertical longitudinal section; this can then be placed upon paper and traced; it will give a longitudinal section of the cavity of the palate with the level of the cusps of the upper teeth, from which the depth at any time can be accurately measured. Another section across the first molars or any desired part is then taken with Godiva and traced in the same manner.

The general character of the arch is taken by inserting the model itself upon paper and marking round the outer cusps and cutting edges of the teeth, as the general type of the arch of the teeth is best indicated in the cutting edges of the front teeth and the points of the external cusps of the masticating teeth. The preceding diagram will illustrate what is meant.

The model of a *macroid* upper jaw sent, is that of a medium-sized country clergyman with no other marked peculiarity about him.

F. H. BALKWILL, 3 Princes Square, Plymouth.

MR. HENRY SEWILL said that he also should be glad to hear some further explanation from Mr. Coles respecting the points to which Dr. Walker had called attention. But, before criticising that part of the paper, he felt bound to enter a strong protest against the barbarous words which Mr. Coles had coined for the purpose of distinguishing his different classes. He did not pretend to be a great classical scholar, and, therefore, the remarks he was about to make were made not so much in a spirit of criticism as of humble inquiry. Mr. Coles' first subdivisions were the macroid and microid ; these words were derived from the Greek $\mu\alpha\nu\rho\sigma$, big, and $\mu\iota\nu\rho\sigma$, small, with the addition of the word $\varepsilon\iota\delta\sigma\varsigma$, or $\o\iota\delta\sigma\varsigma$, meaning like. There were, no doubt, already in use a number of words ending in "oid," which were compounded of the adjective $\varepsilon\iota\delta\sigma\varsigma$, with a substantive, and meaning something like the substantive ; thus, one might very properly speak of a tumor as encephaloid—brain-like, or of a bone as sphenoid—wedge-like ; but to speak of a big-like jaw or a small-like jaw was ridiculous—the jaws must be either big or little. As to the terms dolichoid and brachoid, Mr. Coles stated that he had borrowed them from cranial morphology ; but the same objection applied to these as to the other names, and, as a fact, you would not find in cranial morphology any such terms as dolichoid skull or brachoid skull. Scientific people did not speak of the *similitude of a long skull*, or the *similitude of a short skull*, but they spoke of dolichocephalic or brachiocephalic races. Intermaxillary prognathism was a hybrid phrase, the meaning of which would puzzle any one to find out if they had only the derivation of the words to guide them ; literally translated it would mean "between-the-jaw before-the-jawism." The test of the value of a scientific term was that it should express the same meaning to scientific men of every nationality. But it might be said that the words had been Anglicized, and had a recognized meaning apart from their strict etymological derivation. The term prognathous certainly had a recognized meaning, but it was not the meaning which Mr. Coles wished to attach to it. In certain of the lower races of mankind the jaws, as a whole, were prominent, the prominence being due in part to the massive form and really increased size of the jaws, but being for the most part rather apparent than real, owing to the smallness of the forehead in these races, in consequence of the small development of the brain. This was what was meant by prognathism, but he doubted whether anybody could tell what intermaxillary prognathism might mean.

"Intermaxillary upognathism" was another extraordinary compound of

Latin and Greek. In the first place, *ὑπό* was always written with an aspirate, and therefore he should prefer to call it "hypo;" and, in the second, it always meant *under*, in the sense of *beneath*, and never in the sense of *deficient* or *wanting*. Assuming, therefore, that intermaxillary upognathism was translatable, it could not mean what Mr. Coles wanted it to mean.

The only words, out of the number which Mr. Coles had coined, which could be said to possess a clear meaning, were lambdoid and alphoid; he could find no fault with them, but he could not see that the term lambdoid maxilla was any improvement on the old name V-shaped jaw.

He was not going to discuss Mr. Coles' wonderful triangle, nor to examine critically his base line; he would not attempt to follow him in this trigonometrical survey of the human palate. The technical character of the paper made it a difficult one to grasp, and he had not quite mastered all that Mr. Coles had stated toward the end of his paper. He would only call attention specially to the following passage: "My first assertion is this, that the deformity known as intermaxillary prognathism is the result of a force operating on the intermaxillary bone, such force originating in the body of the sphenoid and being transmitted by the intervening nasal system. I may at once say, that when speaking of force, I mean a direction of growth in a given line, of such energy as to overcome the resistance offered to it by surrounding structures." It was well known that the ancients ascribed wonderful properties to the pituitary body which was situated on the body of the sphenoid bone, but he had never before heard that any force resided in the body of the sphenoid bone itself. If they would accept, on the authority of Mr. Coles, the statement that the force in the body of the sphenoid bone was capable of controlling and governing the growth of the premaxillary bone, there would be no difficulty in receiving and agreeing with all the other conclusions which Mr. Coles had set forth. This one scientific fact was sufficient by itself to establish the reputation of Mr. Coles and to shed a reflected halo on all the members of the Odontological Society.

Dr. COBBOLD: Sir—There are very few points of connection between the study of dental science and of mental science; but I think the formation and the shape of the palate and the dental arch in imbeciles is one point with regard to which they do come in contact. As medical officer of an asylum, I take a great interest in this subject; and knowing this, Mr. Turner asked me to be here this evening. Some four years

ago Dr. Claye Shaw made a number of measurements of the palates of imbeciles at the Leavesden Asylum and I assisted him. His results were published in the *Journal of Medical Science* for July, 1876, and Mr. Oakley Coles, in his recent communication, has referred to this paper. He remarks that there is a great similarity between the results of the measurements which he has made, and those arrived at by Dr. Shaw, as to the average size of palates. As to the width and length of palates, the measurements by the two observers are almost identical, but there is strong discrepancy as regards the average height. Dr. Claye Shaw gives much higher palates than those given by Mr. Coles. Mr. Coles tries to explain this difference on the supposition that Dr. Shaw's measurements were made by measuring the palate from the grinding surface of the teeth to the roof of the palate; whereas, Mr. Coles' own measurements were made from the junction of the neck of the tooth with the alveolar process to the top of the palate. But I can state positively that Dr. Claye Shaw's measurements were not made from the level of the grinding surface of the teeth—they were made from the junction of the neck of the tooth with the gum. But his measurements were all made in living subjects, whereas Mr. Coles' were made from dry skulls, and, therefore, the only difference in the mode of measurement would be the thickness of the gum covering the alveolar process. I do not think this would be sufficient altogether to account for the difference between Dr. Claye Shaw and Mr. Coles. Then we should have to go further and seek an explanation elsewhere, and I think it may be found in this—that Dr. Shaw's measurements were nearly all made upon imbeciles and idiots, while I believe that Mr. Coles drew his average chiefly from normal adults, though a number of measurements of the palates of imbeciles were probably reckoned with the others. I think that that accounts for the difference in height between the two observers. Dr. Shaw, in his paper, says that he considers that the worst idiot may have a well-formed palate, and to prove that quotes the case of one woman, an idiot of the lowest type, namely, microcephalic, who, as he says, has a very well-formed palate, in fact, one of the lowest palates which he found. I do not agree with him. The woman is edentulous; she has had no teeth for years. Her alveolar processes are consequently atrophied; and her sister, who is a microcephalic idiot, of about the same size and type, has teeth and has a high palate. Therefore, I do not think that case proves Dr. Shaw's argument, although I would not say that such cases could not be found. Since reading Mr. Coles' paper I have made a number of measurements myself, some of normal palates and some of imbeciles,

on Mr. Coles' method, but all in the living subject. I made some thirty-five measurements, and have drawn out the triangles and diameters as recommended by him. I must say I think that the triangle is very useful for the purpose of measuring the dental and alveolar arches. It gives us the length and the width at one or two places, and the point at which the interbicuspid line cuts the triangle, although it does not take into account the height or the shape of the palate. So that the triangle is of little use in describing the form of the palate, but is very useful in giving us some of the dimensions, at any rate, of the dental and alveolar arches. One of the conclusions that Mr. Oakley Coles comes to is this, that the best type of European jaw gives an equilateral triangle, when measured by his method. I cannot agree with him in that. From the few observations of normal palates that I have made, I find that the base line is considerably longer than the sides of the triangle. It is only in a few cases of deformed palate, where there has been some degree of prognathism, that I have found the sides of the triangle equal to, or longer than, the base. I must say that in the healthy sane people whom I have examined, they are not a very large number certainly, but I have always found the base longer than, and sometimes considerably longer than, the sides of the triangle. Again, as to the position at which the interbicuspid line cuts the triangle. Mr. Coles tells us that it ought to cut this line as nearly as possible at its centre, five-tenths from one end. I have found this line posterior to the central point—sometimes considerably—but always posterior to it, not only in healthy palates, but also in the deformed ones of idiots and imbeciles. In only one case out of fifty have I found the line pass in front, and that was a case of intermaxillary prognathism. I have had some little difficulty in understanding the difference between the brachoid and the dolichoid palates, but I think I now understand it. I have no doubt Mr. Coles would be able, by looking at the model of a palate, to tell us at once whether such a palate was brachoid or dolichoid, as he understands the terms, or as he wishes them used; but I doubt whether, by looking at the triangles drawn from those palates after his own method, he would be able to tell us whether any given palate was a brachoid palate or a dolichoid palate. I have been unable to do so at present. As to the part played by the intermaxillary bones in the formation of the shape of the palate, there is a marked difference in the opinions expressed by Dr. Claye Shaw and Mr. Oakley Coles. Dr. Claye Shaw lays great stress on the shape and form of the superior maxillary bones and of the palate bones. He says, in fact, that the intermaxillary bones

may be left out of the question as not influencing the shape of the palate in any way. Mr. Coles, as we have heard read to us this evening, says that they play the chief part in determining whether a palate shall be long or short, or whether it shall be prognathous or upognathous. In this matter I am inclined to agree with Mr. Coles, and not with Dr. Claye Shaw.

(*To be Continued.*)

ALABAMA DENTAL ASSOCIATION.

The Alabama Dental Association was reorganized in Montgomery, Ala., on the 20th of July. The following officers were elected for the ensuing year :

President, W. D. Dunlap, Selma, Ala.; 1st Vice-President, E. S. Chisholm, Tuscaloosa, Ala.; 2d Vice-President, Wm. R. McWilliams, Athens, Ala.; Recording Secretary, T. M. Allen, Eufaula, Ala.; Corresponding Secretary, G. M. Rousseau, Montgomery, Ala.; Treasurer, S. Rambo, Montgomery, Ala.

Delegates to American and National Dental Association :

E. S. Chisholm, alternate H. D. Boyd; T. M. Allen, alternate R. U. DuBois; S. C. Wilkerson, alternate J. C. Wilkerson; A. C. Walker, alternate S. G. Robertson.

The Association is again on a prosperous footing, with a goodly number of active members. After a very pleasant meeting the Association adjourned, to meet in Selma, Ala., on the third Tuesday in July, 1881. This Association was first organized on the 6th of October, 1869; but owing to yellow fever epidemics there has been no meeting held for the last few years, but from the interest that is being taken it will be kept up better in the future.

T. M. ALLEN, *Recording Secretary.*

THE DENTAL ASSOCIATION OF THE UNITED STATES OF AMERICA.

A new Association, under the above name, was founded in New York during the week ending August 14th, the headquarters of which are to be at Washington. Dr. A. L. Northrop, of New York, was elected President for the coming year; Dr. R. F. Hunt, of Washington, Secretary, and Dr. H. P. Noble, of Washington, Treasurer. It seems to be an important movement, and we shall give a more extended report of the proceedings next month.

PENNSYLVANIA STATE DENTAL ASSOCIATION.

The Twelfth Annual Meeting of the Pennsylvania State Dental Society has just closed at Bellefonte. The meeting was largely attended. An able address was delivered by the retiring President, Dr. W. E. Magill, of Erie. Papers were read by Professors D. D. Smith, E. T. Darby and Dr. H. C. Longnecker, of Philadelphia; Drs. Libbey, King, Fundenburg and Depuy, of Pittsburgh; W. B. Miller, of Altoona; E. P. Kremer, of Lebanon; G. W. Adams, of Bristol; C. S. Beck, of Wilkes-Barre; H. Gerhart, of Lewisburg; M. H. Webb, of Lancaster.

Clinics were held, and the operators were Drs. Libbey, Webb, Underwood, Baker, Longnecker, Simpson and Campbell. The reports of microscopical investigations were especially interesting and instructive, and the papers generally were meritorious productions. Action was taken to more thoroughly enforce the present law regulating the practice of dentistry, by voting means, and instructing the committee to each carry (if necessary) one or more cases to the Supreme Court.

The following new members were received: F. A. Reinhart, G. L. Simpson, J. A. Libbey and L. Depuy, of the Pittsburgh Association; J. H. Heivley, J. A. Todd, F. Herrick, E. M. Wolfe and W. B. Isenberg, of Lake Erie Association; W. F. Litch, Pennsylvania College; J. A. Thompson, M. L. Logan, Central Pennsylvania Association; E. J. Baird, Susquehanna Association; C. V. Kratzer, Lebanon Valley Dental Society, and E. M. Zell, Harris Dental Association.

The following officers were elected for the ensuing year: President, H. Gerhart, D.D.S., Lewisburg; 1st Vice-President, C. B. Ansart, D.D.S., Oil City; 2d Vice-President, G. W. Klump, D.D.S., Williamsport; Secretary, E. P. Kremer, D.D.S., Lebanon; Assistant Secretary, W. B. Miller, D.D.S., Altoona; Corresponding Secretary, E. E. Long, D.D.S., Pittston; Treasurer, J. C. Green, D.D.S., West Chester; Examining Board, C. N. Pierce, E. T. Darby, D. D. Smith, W. E. Magill, J. C. Green and H. Gerhart; Board of Censors, Drs. Adams, Beck, Essig, Klump and Rhone; Publication Committee, Drs. Essig, Litch, Webb, King, Kremer, Long and Green; Delegates to the American Dental Association, Drs. Baker, Underwood, Webb, Klump, Beck, Simpson and Fundenburg; Executive Committee, Drs. Magill, Todd, Ansart, Wolfe and Herrick.

Upon motion, the Society adjourned to meet at Chautauqua Lake, July, 1881.

AMERICAN ACADEMY OF DENTAL SCIENCE.

The thirteenth annual meeting of the American Academy of Dental Science will be held in Boston, on Wednesday, October 27th, at 10 o'clock, A. M. The annual address will be delivered at 2 P. M., by Dr. Joshua Tucker, of Boston. Dr. Tucker's world-wide reputation and large experience cannot fail to make the occasion both interesting and instructive. Members of the profession are cordially invited to attend.

C. P. WILSON,

Corresponding Secretary.

BOOK NOTICES.

RECORDS OF THE CONNECTICUT VALLEY DENTAL SOCIETY FROM OCTOBER, 1876, TO JUNE, 1879.—This neatly bound volume is not only calculated to be of interest and value to the members of the Society under the auspices of which it is published, but to the profession at large. It contains a number of papers, some of which are especially well thought out and deserving of a wide circulation and careful study. We think that we are within bounds in saying that nine-tenths of these 224 pages are taken up with broad subjects that have no special connection with Connecticut Valley. In this fact lies the chief value of the work. It is not a local publication, although it is one which the dental profession of the country may well thank a local society for issuing. The Publication Committee are Drs. C. T. Stockwell, L. D. Shepard, W. H. Jones, J. F. Adams, L. C. Taylor and A. M. Ross, and the printers Messrs. Atwood & Noyes, Springfield, Mass.

AMERICAN NEWSPAPER DIRECTORY. GEO. P. ROWELL & Co., NEW YORK.—The twelfth annual issue of the above work is a monument of careful and arduous labor, of which Messrs. Rowell & Co. may well be proud. The publication of a book which professes to give a short account of all the newspapers and periodicals of the United States and Canada, their *raisons d'être*, politics, an approximate estimate of their circulation, as well as other particulars, must necessarily be a gigantic task. We are quite within the truth in saying that this work is the largest and most complete newspaper directory in the world. It possesses features which are not to be found in the English directories that are both orig-

inal and valuable. Every page bears evidence to the experience, care and skill of its editor. To bankers and business men who need information as to the population and size of towns and cities in any part of the States, this work will be found exceedingly valuable. It has 1,044 pages, is well printed on good paper, and its binding is of a handsome and serviceable character. The critic who is the hardest to please cannot, surely, do aught but congratulate the publishers on their enterprise, and the success which has attended it.

EDWARD R. SQUIBB, M. D., ON THE RELATIONS OF THE MEDICAL PROFESSION TO THE TRADE INTERESTS OF THE MATERIA MEDICA, AND A NOTE ON PEPSIN. Published by H. T. Cornett, 8 Spruce Street, New York.—In this pamphlet Dr. Squibb attacks in a vigorous manner the practice which is common amongst some physicians of recommending this or that medical specialty for business purposes. He maintains that when the medical man joins the business man in extending the profits of his business, he loses in professional tone and dignity. The writer is not inclined to admit that a higher standard of medical education will entirely correct the evil; he asks if it is not rather a higher standard of moral responsibility that is needed—a greater respect for the truth. The doctor, after dealing generally with what he deems the shortcomings of some members of the medical profession, refers to a paper read before the Medical Society of the County of Kings, entitled, “A Ready Method of Testing Pepsin.” In this paper the pepsin sold by one manufacturer was highly praised, and Dr. Squibb thinks that the comparisons drawn between it and that made by some other leading manufacturers, whose names were given in the paper, were too marked and uncalled for. After somewhat severely castigating the writer of the objectionable paper and those who desired to have it printed in the Journal of the Society, the doctor goes on, in his “Notes on Pepsin,” to give the results of some of his own tests. Coming from so eminent an authority, these notes must be considered valuable. The paper written by Dr. J. Merritt, which called forth Dr. Squibb’s remarks, is also given at the end of the work.

THIRTEENTH ANNOUNCEMENT OF BOSTON DENTAL COLLEGE.—The thirteenth announcement of the Boston Dental College is also before us. The institution appears to be in a prosperous condition and is doing much good service in the interests of the profession. The graduates during the year numbered nineteen.

EIGHTEENTH ANNUAL ANNOUNCEMENT OF THE PHILADELPHIA DENTAL COLLEGE.—We have received the eighteenth annual announcement of the Philadelphia Dental College. It contains the usual information as to the *modus operandi* of the institution and other matters of interest, and furnishes a list of those matriculated and graduated during the past year. The graduates number thirty-two and the matriculates eighty-nine.

NOTES.

South Carolina State Dental Association.

The above Association held its meeting on the 6th of July, in Charleston, S. C. There was a large attendance and a pleasant session.

The following officers were elected to serve for the ensuing year :

President, Dr. B. A. Muckenfuss; 1st Vice-President, Dr. G. B. White; 2d Vice-President, Dr. J. T. Calvert; Corresponding Secretary, Dr. R. Atmar Smith; Recording Secretary, Dr. G. F. S. Wright; Treasurer, Dr. T. W. Zoucher; Board of Dental Examiners, Drs. Muckenfuss, Smith, White, Calvert, Wright, Boucher and Wilson. Dr. N. A. Teague, of Aiken, was awarded the beneficiary course at Baltimore for the years 1880-1. The next meeting will be held on the first Tuesday in May, 1881, at Cheraw.

G. F. S. WRIGHT, *Rec. Sec.*

Nebraska State Dental Society.

The Fourth Annual Meeting of the Nebraska State Dental Society will meet at Omaha, Tuesday, September 21st, 1880, at 7:30 P. M.

W. F. ROSEMAN, *Rec. Sec.*

Dentists in America.

IT is not strange that 12,000 dentists find employment in the United States. Dr. J. N. Farrar, of New York, states in an article published in the *Dental Laboratory* that not less than half a ton of pure gold, costing about \$500,000, is annually

packed away in the mouths of Americans; and, in addition to this, there is probably four times as much cheaper material, such as silver, platina, etc., used in filling cavities in teeth. He makes the curious and interesting estimate that only three hundred years would be required to bury the amount of gold coin now in circulation in the country (\$150,000,000) in the grave-yards. The magnitude of American dental operations is shown by the statement that about three million artificial or porcelain teeth, mounted on various kinds of plates, are made every year. Dr. Farrar supplements these figures with the important statement, based on statistics compiled with painstaking labor, that out of an average of eighty people of all classes, only one can be found with perfect dental organs. The other seventy-nine require a dentist's care.

Strange Loss of a Set of Teeth.

A case is reported in the current number of the London *Lancet* of a lady aged fifty-five years missing her set of teeth, which were subsequently found in her pharynx. Feeling rather unwell, she called a doctor in, but made no reference to her mouth or throat. He noticed, however, that her speech appeared to be somewhat peculiar, and on examination found that the plate and teeth were low in the back of the pharynx. They were removed without any difficulty, having been there ten hours.

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*October, 1880.*—No. 82.

THE QUESTION OF A NATIONAL DENTAL ASSOCIATION.

We give in this month's issue of the *MISCELLANY* a report of the proceedings connected with the formation of the "Dental Association of the United States of America." Embodied in this report will be found a summary of the constitution of the new Association, copies of which can be obtained, in their entirety, from the Secretary. There are undoubtedly some valuable provisions in this constitution, which should do much to contribute toward the usefulness and success of the organization. The division of the continent into districts, in which the annual meetings will be held periodically, is an excellent idea, and will in future years—or, say, by future generations—be found to be more practicable and attended with more satisfactory results than it can possibly be in the nineteenth century. It will be readily conceived that the meeting held in District No. 5, for example, would scarcely be one of the greatest possible successes within the next few years, although when the States embraced in that distant Western region have yielded more to the far-reaching and irresistible efforts of civilization, the meetings to be held there will necessarily be of more importance and interest. There are other features in the constitution which are worth attention, and we refer our readers to them as they appear on another page.

These, however, are mere matters of detail, but they are matters of practical importance, nevertheless. The future of this Association will be decided by the methods that are adopted by those who are its leading

spirits in their working out of details. There are those who think that it is to be like the small stone cut out of the mountain, which eventually demolished everything that was in any way opposed to it. We have not so regarded it, nor do we care to consider the new organization as composed of a bellicose body of men, desiring to usurp the position occupied by associations that have been in the field and doing good work for more than twenty years. We need scarcely say that we utterly disclaim all partisanship in this matter. All right-thinking men who have the cause of the profession at heart, will repudiate the idea of there being a North and a South in dentistry. Whatever may have been the issue between these two great sections of the country politically, the cause of dentistry is a universal one, and it is a matter of regret that there should ever be a feeling of antagonism spring up between members of the profession. But we would not mistake antagonism for a healthy rivalry or competition, and our readers would do well to guard against the same error. While there can in no sense be found room for two national associations in one nation, yet the inauguration of a body which claims to be national while there is already one in existence which puts forth similar claims, may not necessarily be an unmitigated evil. If a number of dentists have for some time felt that there was no national association which they could join, and in which they would meet with a fellow-feeling, and if this new Association helps to remove this grievance, it will not exist in vain. There is a very wide field for scientific research in matters of paramount interest and importance to the profession, and a lively and friendly competition does much to prevent organizations from dying of inanition.

The large body of Southern dentists who met in New York in August, afforded an indisputable proof of the fact that they feel the necessity for another Association. It is true they have their State dental associations, but these are not enough. They were determined to have something more—something that did not before exist—and they have got it. The gathering of Southern dentists in New York in such force gave many persons in this city, who are interested in the cause, an opportunity of meeting personally with some of the leading members of the profession from another section of the country. For that, if for nothing else, we are glad that this movement has been set on foot, although behind and beyond this, it is to be hoped that good, directly or indirectly, will come out of it. Many of our citizens who are members of the American Dental Association, and who have never seen any necessity for the formation of another society, have yet considerable sympathy with their

Southern brethren, and many of them have since expressed sincere regret that they were absent from the city, and were unable to meet them as individuals and welcome them to New York. However, the unanimity of sentiment which was manifested generally at the meetings held in this city, showed conclusively that notwithstanding minor differences, there is a true *esprit de corps* among the members of the profession. Whatever may be the fortunes of the rival associations, each of which claims to be truly national—whether they will run on parallel lines, or in any, at present unforeseen, manner, collide—we see no fear that any evil will result from the late activity in dental circles.

A METHOD OF RECORDING DENTAL OPERATIONS.

BY W. S. ELLIOTT, M.D., D.D.S., M.D.S.

The advantages of a complete and simple record of operations cannot be over-estimated if one would know the full measure of his successes or failures. Comparison of methods of operating, or the results of therapeutical treatment, lead to advancement which could not be obtained through a careless or empirical routine of practice; and in order to secure such comparison all operations should be recorded by a system of notation at once expressive and complete in its showing.

The following method is offered as one which has been tried and found to fulfill all necessary requirements :

Fig. 1 represents the cavity of the mouth divided into four sections.

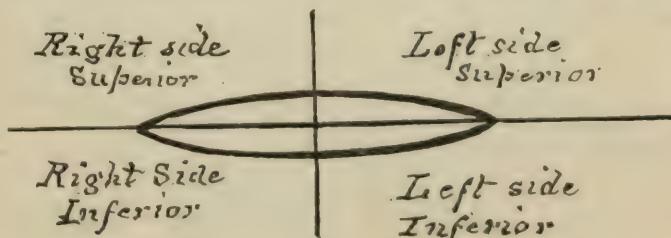


FIG. 1.

The horizontal line divides the superior from the inferior maxilla. The perpendicular line represents the median line of the mouth. There are thus established four angles, each of which are written, thus :



Eight teeth are comprised in each of the angles, and these are respec-

tively numbered from the central incisors toward the *dens sapientia* ; thus the central incisor is figured 1; the lateral, 2; the cuspid, 3, etc.

The following symbols are used :

c—cotton, or other similar dressing.	—living pulp.
a—gold.	G—Gold plate.
e—tin.	R—Rubber plate.
i—amalgam.	C—Celluloid plate.
o—oxychloride, or allied filling.	G A—Gold alloy plate.
u—gutta-percha, or allied filling.	C G—Continuous gum plate.
—extracted or missing tooth.	S—Silver plate.
—Pivot.	P—Platina plate.
—pulp, or root-cavity.	N, O—Nitrous oxide.
•—Lingual, or palatal.	E—Ether.

Should it be required to represent, for instance, the right superior central incisor, it would, by this system, be written thus: 1 The angle shows the right superior maxilla ; the figure the first tooth or central incisor. Had this tooth received a gold filling on the anterior approximal surface we would make the record thus: 1 a The letter *a* stands for gold, and is placed on the mesial side of the figure or tooth. If the filling was on the distal surface, then the letter would have been placed on the other side, thus: a 1 If the filling was on the labial face, then we would place the letter above the figure, thus: 1 a If on the palatal surface, thus: 1 i

Suppose the left superior lateral had received a gutta-percha root filling and an additional gold filling on its distal surface, the record would be made thus: 1 a The angle shows the left superior maxilla ; the figure, the lateral incisor ; the symbol above the figure represents the root canal ; the letter *u*, gutta-percha, and *a*, gold.

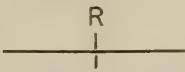
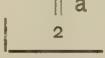
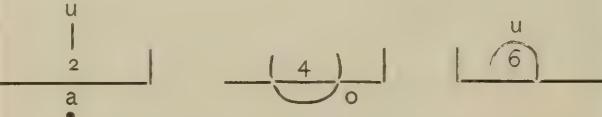
Other examples are explained below.

NEW YORK, JANUARY 1ST, 1880.

Jan.	1	Miss Mary Jones.	4	00
		<u> 1 </u> 6 a		

[Left superior sixth year molar, filled on distal aspect of crown with gold.]

Jan.	2	Mr. Thomas Day.	3	00
		<u>8</u> ^u		
		[Left superior <i>dens sapientia</i> , filled on buccal and distal surface with gutta-percha in one continuous filling.]		
	2	Mrs. Hans Schliecher.	2	00
		<u>7</u>		
		[Left superior twelfth year molar, filled on crown with amalgam. The \times placed on the line shows that the sixth year molar is absent.]		
Feb.	2	Miss Mamie Smith.	2	50
		\$0.50 \$1.00 \$1.00		
		<u>6</u> <u>5</u> <u>6</u>		
		S		
		[Left inferior sixth year molar extracted. Left inferior second bicuspid, having a living pulp, received a cotton dressing upon the crown. Right inferior sixth year molar received a crown filling of gutta-percha.]		
	10	Miss Huntting.	2	00
		<u>6</u> <u>5</u> <u>4</u> <u>4</u> .		
		S S S .		
		[Right superior first and second bicuspids and sixth year molar, together with left superior first bicuspid, extracted; the left superior second bicuspid and sixth year molar being absent.]		
March	4	Mr. Wm. Whitmore.	45	00
		C G A		
		<u> </u> <u>7</u> <u>6</u> <u>5</u> <u>4</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u>		
		[The double angle represents the entire		

		superior maxilla; the C represents celluloid plate; all together, indicating that a full case of artificial teeth were inserted upon celluloid. The second diagram shows the lower bicuspids and molars to have been inserted upon gold alloy.]		
March	20	Mrs. Alden. 	50	00
		[A complete upper and lower set, inserted on rubber.]		
	25	Mrs. E. Elliott. 	10	00
		[Left superior lateral, inserted on gold pivot.]		
June	10	Dr. Jas. Powers. 	10	00
		[Right superior lateral incisor received a gutta-percha root filling, also a gold filling upon the palatal surface. The right superior first bicuspid received a continuous filling of oxychloride on the mesial, crown and distal surfaces. The left inferior sixth year molar girded on mesial, buccal and distal surfaces, filled with gutta-percha.]		
	20	Mrs. Hayes. 	10	00
		N ₂ O.		
		[Mrs. Hayes had thirty-two teeth extracted, having inhaled nitrous oxide.]		

THE USE OF CONFECTIONERY AND ITS EFFECT ON
THE TEETH.

By N. MORGAN, D.D.S., SPRINGFIELD, MASS.

Read before the Connecticut Valley Dental Society, June 17th, 1880.

The subject of this paper has been chosen, not for the reason that we have more absolute facts to present in regard to it, but because we consider it one of much importance, and one which has not received due consideration. The old saying, that "an ounce of prevention is worth more than a pound of cure," is perhaps more emphatically true when applied to decay of the teeth than to almost any other condition. This we shall endeavor to make clear in such ways as our topic will allow. We rightly consider ourselves, as a profession, more fully living up to our obligations when we prevent disease than when we assist nature in its cure. For this reason we are at present going farther into research and exploration, that we may gain knowledge of some of the many causes which result in disease. Having this knowledge, we should exert our influence so far as possible to educate the public to a proper sense of their duty in the prevention of disease. By what method we are to do this is perhaps a matter of doubt, but probably in the old Scripture way of "line upon line, and precept upon precept." We should, however, first of all, be well assured that our teachings are to be relied upon as truth; therefore, we must enter logically into the study of disease, and not be biased by prejudice or led astray by first constructing a theory and afterwards forcing all our study to bolster up the same. If those things we deplore as evil in their effect on the system were only distasteful our task would be comparatively easy; unfortunately they are most reluctantly given up and habit makes the self-denial all the greater. Judging from appearances, some persons seem to live as though making everything conduce to the gratification of the senses was the principal object in life. This is, perhaps, the result of ignorance, and when the transgression against nature's laws brings its sure punishment, our regret is that we were not wiser. When the infliction comes to our children as the result of our foolish indulgence in permitting what is not for their good, our sorrow is even greater than if we ourselves were the sufferers.

During 1879 over four million dollars' worth of candy was manufactured in Philadelphia, and in one week of the same year there was sold from one confectioner's store, in Springfield, over twenty-three

tons. When, however, we consider the amount dispensed at the many smaller establishments, as well as at every grocery store, we must be convinced that the use of the article is simply enormous. It is hardly necessary, however, to enter into a discussion in regard to the extensive use of confectionery, for it would seem impossible that any observing person would be so unreasonable as to deny the fact. Its extensive use being admitted by all, what can be said regarding its effects on the system? Many persons claim that they use only those confections which are called pure, or what they suppose to be free from adulterations, and therefore harmless. Are they harmless? Can any confection be purer than pure sugar, of which only one form is sold by confectioners, and that is rock candy? This is but little sought after, the kinds most desired being mixtures of sugar with other substances, and flavored with essential oils, essences, and the like.

Admitting for the moment that only pure sugar is used—which is not a confection—let us ascertain what its influence is on the system. Doubtless, to a limited extent, its use is beneficial, in that it serves to dilute the stronger articles of food, rendering them more palatable and more digestible; also, to some extent, in retaining the normal heat of the system. But we must remember that sugar, as such, is not the only form in which we are supplied with this substance. All the starch entering into our food (and the proportion is large) is changed by the process of digestion into sugar; also fruits and vegetables are more or less rich in saccharine elements. Realizing, then, how largely the saccharine element enters into our daily food, and how comparatively slight is the demand on the part of the system for it, are we not forced to the conclusion that the tendency is very great toward excess, even if confined to its use as an article of food?

What can be said of its injurious effects when used to excess? We are told that as a food it is a failure. The chemist tells us that the composition of cane sugar is C_{12}, H_{11}, O_{11} . The human body having some fourteen elements, the three of sugar would be hardly sufficient for its requirements. Several years ago, Dr. S. W. Mitchell, of Philadelphia, proved that he could produce cataract of both eyes in half an hour by simply injecting a saturated solution of sugar beneath the skin of a frog or Guinea pig, and these results are accepted by the medical profession as satisfactory. It is stated that Dr. C. B. Agnew, of New York, found that out of one thousand children under eighteen years of age, in a school in his vicinity, seven hundred and three had defective organs of vision when examined with the ophthalmoscope. We may not know as

a fact that a sugar and starch diet have anything to do with causing this very large percentage of defective eyes, but have we not a right to suppose that, in view of the above experiments, it may have a decided influence? In its relation to the teeth we find that it cannot enter into their inorganic constituents to the least degree, and into the organic parts, which comprise only about twenty per cent. of their whole structure, to a limited extent, if at all.

Its most evil influence, when used to excess with our ordinary diet, is probably manifested, first of all, on the digestive organs, and through them on the whole system, and not alone on the teeth, though it is probable that they suffer to a larger proportional extent, for various reasons. It is claimed that to digest saccharine matter without inconvenience requires the mouth and esophagus to be throughout in a normal state, as the greater part of this substance should be absorbed before it arrives at the stomach, and that in most of the lighter cases of dyspepsia and the dyspepsia of excess, it is probably this power which principally fails. This results in the saccharine matter being passed along into the stomach and intestinal canal, where it is more slowly absorbed and tends to pass into fermentation, giving rise to acetic, lactic, or other acids. During this process it is also said to encourage fermentation in other articles of food, thus not only interfering with the process of nutrition so as to lower the condition of the whole system, but by this very means of perverted nutrition and secretions tending to increase the dyspepsia. These changes in the contents of the stomach give rise to eructations, which not only cause irritation of the mucous membrane of all these parts, promote the development of fungi and parasitic formations, but with the altered oral secretions coming in contact with the teeth act on them directly, and also hasten fermentation in any particles of food which may be retained about them, thus increasing the acid condition. These conditions are well accepted causes of the decay of the teeth.

We have thus far been discussing the influence of pure sugar on the system and are convinced of its evil influence; but sugar, as we have previously stated, is not of itself a confection, though it is necessarily a principal ingredient. The materials entering into composition with sugar to form the different confections are so numerous as to preclude the mention of them all in this paper. A perusal of the *Confectioners' Journal* would doubtless surprise any person not already informed of the extent to which the business is being pushed in this country at the present day. The ingenuity of the manufacturers is exercised to the utmost to produce new preparations which shall please both the eye and

palate of the purchaser. At the same time competition is so great as to necessitate comparatively low prices, and a search for substances which shall not detract from their apparent good qualities or incur too much of public disfavor from their injurious effects. This state of affairs in the confectioners' department has resulted in the very extensive substitution of glucose for sugar, and the many adulterations formerly resorted to, such as terra alba, plaster of Paris, etc. The use of glucose is at present so extensive that the manufacturers cannot supply the demand. As to its effect on the system, when compared with cane sugar, there is some doubt. Many consider it injurious, or at least of more difficult digestion, while so scientific a man as Prof. Sharpless considers it harmless, though he states this of the domestic manufacture and not of the English.

The coloring materials are probably less evil in their influence than formerly, being carmine, cochineal, saffron, etc., with undoubtedly a limited use of the anilines. Other substances which are used in confections are alum, cream of tartar, tartaric acid, some of the vegetable gums, and lastly, various flavors in the form of essential oils, etc. A few of the most honest manufacturers probably use the pure vegetable oils so far as they can be obtained, but this cannot be expected of the majority, competition being so sharp as to encourage the use of flavors produced by compounding the various acids, which cost very little, compared with the genuine article. These acids are known to act directly on tooth structure. Magitot gives us the results of many experiments, which must be convincing from the care exercised in performing them.

Although some of these substances are directly injurious to the teeth, we must look to the secondary or systemic conditions as being the avenue through which their principal influence on the teeth is exerted. When we enter into this research we are surrounded by great difficulty and much doubt. There are, however, many facts which are of great assistance. We know, first of all, that there is a constant waste of the tissues of the body, which cannot be sustained in a physiological condition unless there be a supply of material for new formation. This supply, received in the form of food, is made suitable for this purpose by the process of digestion. But what if the food does not contain the essential elements? Can the system then be sufficiently nourished? We have seen that the elements entering into these confections are not sufficient for this purpose, and, worst of all, the appetite is so depraved by their use that suitable food becomes distasteful. We should not witness these results so frequently were the confections used only in connection with,

or immediately following, a regular meal. Our observation shows that this is contrary to their ordinary use, partaken of as they are at all hours, and I am forced to believe that just here much of the evil arises. Can we not all testify to the fact that children have no appetite for real food after such indulgence? We have made so many inquiries of patients, and especially of the children, in regard to these facts, that we must accept them. And yet children want confectionery, and the more they have, the more they desire. They can no more readily pass to and from school without calling in at the huckster's around the corner, or the grocer's next door, than a drunkard can avoid the many grog shops on his way to and from business.

Do we not fail to search out the causes of dental decay? If it results from errors in diet and regimen, should we not detect the same and order a "right about face," rather than deal out alkaline mouth washes, etc., which do not remove the causes, but only modify the condition? If a child is brought to us with rapidly decaying teeth, and is also excessively indulged in the use of confectionery, and we simply perform the needed operations, raising no warning cry, can we justly complain if, on the failure of the same, we are accounted inefficient operators? Would it not be acting more wisely to warn our patients, or the parents of such a child, that if the course was persisted in we would be in no way responsible for the results? This course would not only result in real benefit to the patient, both in good teeth and general health, but would also redound to our own honor.

DISCUSSION.

Dr. R. A. FONES : I should like to know what the effect of sugar is upon the teeth, and why it is that pain is produced by its contact with exposed dentine? Sometimes, when it is not exposed, sugar will cause, in contact with the enamel, "tooth edge."

Dr. MILLER : I was taught that sugar, as sugar, was not injurious to the teeth.

Dr. NILES : It is a fact that candy is adulterated with glucose, but as all starches are converted into sugar and sugar into glucose in the alimentary system, the adulterant is not injurious.

Dr. ELLIOTT : In my opinion, the cause of this "tooth edge" is an effect of dynamics. I do not believe there is any chemical decomposition of the sugar in contact with the teeth that causes this peculiar effect, but that it is a dynamic effect only, and we can discard the idea that sugar, as sugar, is injurious.

Dr. G. S. H. COWINS: I should like to ask if the enamel prisms are not closed at their outward extremities?

Dr. ELLIOTT: The protoplasmic filaments open externally through the enamel prisms. The gentlemen will have this to learn, that the enamel prisms are not closed at their peripheral ends.

Dr. LOVEJOY: I have met with several cases where soft bread would cause the most intense pain upon teeth that were abraded, and I found that a solid stick of nitrate of silver would relieve it entirely.

Dr. GEO. O. STEARNS: I have a case in mind. A patient of mine, twenty-three years of age, female, has a first left lower bicuspid with no apparent cavity that is extremely sensitive to sweets.

Dr. ELLIOTT: The irritation of these protoplasmic filaments by the dynamical effect of sugar or other substances is arrested by the coagulation of these with the nitrate of silver.

UNERUPTED TEETH IN THE ROOF OF THE MOUTH— FREAKS OF NATURE.

BY DR. J. ALLEN OSMUN, NEWARK, N. J.

Sometimes we come across strange freaks of nature, things which border closely on mysteries, and to which it is exceedingly difficult to assign reasons. These things frequently come under the observation of the physician, and quite as frequently do they appear to the observing dentist. As to the truth of the old saying that "Facts are stranger than fiction," I give the following cases as examples: A few months ago a gentleman called to consult me in regard to a swelling in the roof of his mouth, near the median line, which was very sore and painful.

The history of the case, as he gave it, was that about one year previous his artificial set of teeth commenced to rock, and to remedy it he cut out a small portion of the palatal side, which gave temporary relief; when it again would cause him discomfort, then he would repeat it, until he nearly cut through the plate. During all of this time it became more painful, so he could hardly sleep; this was accompanied by a slight discharge. On consulting his family physician, he pronounced it necrosis of the palatine surface of the maxilla bone, but referred him to me. On inserting a small silver probe I felt convinced that it was an unerupted tooth. Acting on this theory, I made a longitudinal incision

through the soft parts, and with a straight pair of root forceps got a firm hold and brought it out, requiring considerable force to dislodge it. One of the peculiarities was that it came root downward, and having met with some obstruction was turned nearly at right angles posteriorly, the crown pointing towards the nares ; there was some necrosis at the margins of bone, which was easily removed, after which it healed readily, presenting now a normal condition. Considerable hemorrhage accompanied the operation ; patient of a bilious-lymphatic temperament ; age forty-three years.

I am convinced that this is a case of third dentition, and for this reason : The gentleman has worn artificial dentures about eleven years ; for the first seven, a partial plate with molars, bicuspids and one canine. I removed his remaining natural teeth, about four years ago, in order to insert a full denture, and am sure that the centrals were of the second dentition. I extracted them for absorption of the alveolus caused by the partial plate. The tooth being turned at nearly right angles, I think that it must have come in contact with some object before it was thoroughly ossified.

I will give a brief history of another case which came under my notice. A year or so ago a lady consulted me in reference to her plate, which, she said, caused her a great deal of annoyance from becoming loose and not fitting. She said that she had had a number of plates made, and for a time they would fit nicely, and then would commence to rock and trouble her. On making an examination, I thought I discovered the cause in a root, which I attempted to extract, when I found that there was something more. On cutting away the soft tissue, I found the point of an unerupted tooth ; but so firmly was it embedded in the bone that I could get no hold of it whatever, so had to cut away a portion of the bone, which was easily done by the burring engine. I was then enabled to get a firm hold, and brought out a fully developed canine tooth one and one-fourth inches in length. It was laying in a nearly vertical position, the crown pointing toward the left, and the root toward the right. These cases are of interest in showing how wonderfully productive nature is in supplying germs of teeth.

BOOK RECEIVED.

“THE WESTERN FARMER OF AMERICA.” By Augustus Mongredien, author of “Free Trade and English Commerce.” Price threepence. Cassell, Petter, Galpin & Co., London, Paris and New York.

OPENING LECTURE OF WM. H. ATKINSON, M.D., D.D.S.,
BEFORE THE NEW YORK COLLEGE
OF DENTAL SURGERY.

GENTLEMEN: In entering this institution you have undertaken a course of instruction that you look forward to as fitting you for the duties that you expect to have presented to you when you enter practice; and those of you who have already been in practice, and have found out that you have started wrong, have come here with the hope of being set right and starting again.

There are too many of you in one class to make it reasonable for any man of reflection to hope that all of you will be able to grasp what is attempted to be presented to you, simply because the rule has been that you must memorize a lot of theories couched in terms and phrases that you have not understood, and then you must repeat them before an Examining Board, and have them vote yea or nay upon your application for a diploma; and when you have obtained your diplomas many of you are, from the very force of circumstances connected with your course of instruction, no better than those who have stolen their certificates of advanced study, and gotten fools enough to certify that they did know what anatomy, pathology and therapeutics meant; and then, when they come to the test, they do not know what to do, and have not manhood enough to turn about and say, "I will go back and start over again upon a firmer and better foundation."

I have made this little talk on purpose to awaken your attention, so that I might bring your minds down close to the contemplation of the important subject upon which I am going to address you, and all those who are so dyspeptic that they cannot digest the words and sentences I shall use to you, may have the privilege of stopping me and asking me to define more closely.

Pathology is conceded by all to consist of arrest and deflection of physiological or harmonial functional movement.

It will be in vain to pursue this subject without some statement of the activities, a derangement of which constitutes the mode of function denominated pathological.

Physiology is generally defined to be the nutrient operations of the body as a whole, and of the organs as special manifestations of function. Neither of these, however, is capable of revealing to us the changes that

constitute the production and maintenance of these factors of nutrient activity. Systemic and organic activities are but mass presentations of function as aggregates of tissual and molecular changes —occult, indispensable prerequisites to these commonly recognized examples of function.

Molecular changes depend upon the engagement and disengagement of bonds of energy belonging to atoms of which the molecules are composed.

Now, if you know nothing of atoms and molecules, you have no businesss here ; you belong in the microscope room, and you can leave us now or not, as you choose. If you leave, you do so at your own option. Every one that cares for your advancement, or cares for your future history, is aware of the mischief you will certainly do in your attempts to practice the functions of oral surgeons without an understanding of these very small and apparently insignificant things.

The production of water, for instance, depends upon the mergence of two gases into one fluid, by the engagement of definite measures of energy, symbolized by the type of a molecule of water ($H_2 O$) in chemical nomenclature. Any other combination of hydrogen and oxygen would present us with a different molecular body. Again, combustion of vegetable and animal substances will always produce water as one of the resultants of the change of molecular relation.

Physiology may now be more accurately defined to consist of *regulated combustion of pabulum, under the guidance of typal demand*, and pathology as a *conflagration of pabulum under the control of that form of molecular affinities denominated chemical*. This last has long been recognized as the process of *inflammation*, to which we will now direct our attention.

You are aware that I am limited to four lectures in which to try to give you a sufficient impetus to awaken in you a desire to *know*, so strong as to induce you to study closely and become masters of the whole science of oral surgery. How is this to be done in four lectures, if I am not speaking to men who are ready scholars, many of whom graduated from the so-called colleges of the past, have tested the principles there taught, found them false, and have come back with the intention of beginning again at first principles, and starting right once more?

The gradual growth to higher and better interpretations of the phenomena of inflammation, as displayed in the works of John Hunter, Virchow, Rèmak, Billroth, C. O. Weber, Von Recklinghausen, Conheim and Stricker, not to mention many others, are proofs of the want of complete satisfaction with which each has looked upon the labors of

his predecessors and co-workers, as well as upon his own efforts.

Till this day it is impossible for the best observers to designate the point at which *physiological* activity becomes *pathological*. It is at least an entertainable proposition that some of the normal operations attendant upon the ripening of ova and spermatozoids are properly classifiable as inflammatory activities. Now, am I shooting over your heads entirely, or are you digesting what I say? What is the *corpus luteum*? let me ask you that. It is the little body placed in the sac that holds the ova in the ovary, that when the ovum is ripe and ready for impregnation, sets up such a retrogression as to return to the embryonal state of mucous-mass, and allows the membrane to rupture by the same activity resident in this ripened egg seeking the influx of a spermatozoid to enter and lay the foundation of the new being. Now that little scar that is left in the membrane that held the egg is called the "*corpus luteum*." Now what is the point? It is to show you that that act is so akin to what is called inflammation that in all probability the sharpest critic could not distinguish the difference.

I will repeat that sentence. To this day it is impossible for the best observers to designate the point at which *physiological* activity becomes *pathological*.

Histological research has shown the "*corpus luteum*" to be composed of scar tissue, of a like character with scars resulting from traumatic and inflammatory lesions. Excess of blood plasm in any locality is liable to be converted into embryonal corpuscles, or mucous globules, as the indifferent basis from which normal and abnormal products arise, according as the environment tends to increase of the normal tissues. When the blood tracts are obstructed, and the press of the currents great, stasis, exudation and retrogressive molecular changes take charge of the exuded blood plasm, and convert it into the products of the inflammatory process, which this retrogressive metamorphosis constitutes.

Late histological discoveries strongly indicate that *nerve currents* and *blood currents* are necessary conditions to allow inflammation of any territory. Those territories, therefore, that are not supplied with blood currents are, if unaided, incapable of repairing their wounds when traumatically induced. When the neural and vascular currents are coetaneous and unobstructed, it is doubtful if any mere acceleration could result in the inflammatory process. Now what does that mean? That no amount of activity in the nerve currents that can be induced by any means whatever, if there is no obstruction anywhere in the capillary sys-

tem, so that the blood has free circulation in producing the molecular motion—if there be no obstruction, you cannot produce inflammation by any amount of over-work, as it is called; because over-work has been very much misunderstood. And let me say, you had much better *work* out than *rust* out; you had better be *over-worked* than *under-worked* in every respect; because in this under-worked condition obstructions occur that lay the foundation of all the tumors that you will ever meet in all your practice of oral surgery. Allow me to repeat. When the neural (which means nerve) and the vascular (which means vessels) currents are *coetaneous* and unobstructed, it is doubtful if any mere acceleration could result in the inflammatory process; but when the heart's action is too great to exactly balance the tonicity of the capillaries (meaning the hair-like vessels) supplied by the nerve currents, obstructions are readily induced in the tortuous channels of the capillary system.

Now, to prevent the inevitable advent of inflammation under such circumstances, the obstructions must be removed, and the simultaneousness of nerve currents and blood currents must be regained. The simplest method of accomplishing this desirable end will be to call the part into vigorous exercise by voluntary or involuntary effort of the subject, or by "massage," the manipulation of another person. The only reason why all inflammation might not thus be successfully treated depends upon our inability to cognize the departure from health at this early stage and to get at the locality. If one were clairvoyant enough to discover the first inception of inflammatory action, it could not be carried on to that point where it becomes inflammatory at all; but almost always when patients come to you in cases of oral surgery, it is very much advanced, so that the whole physiological activity of the entire organism is depressed, and you have a decided state of inflammation.

Swelling, redness, heat and pain have universally been grouped together as the definition of the inflammatory process. I wish all the doctors, physicians and surgeons in the land were present, that these statements might be made in their presence. No one has put on record even an approach to a legitimate, clear and satisfactory statement of the precise difference between normal nutrient function and its derangement, called inflammation.

Let us examine the process of conversion of pabulum (protoplasm) into the elements of tissue, and learn, if we may, that pleasure and pain, health and disease, are qualities or modes and quantities or measures

of functional activities that vanish into each other by disturbing and restoring the balances of regular molecular changes.

How many know what a molecular change is? A molecular change means where atoms are brought near enough together to allow an unseen current to awaken the bond of energy in the atoms and bind them together so as to change their physical presence and make them into a new body, and that is the type of all molecular changes.

To comprehend these, we must cognize the existence of atoms of which the molecules are composed; and to understand the manner of the coming together of the atoms to construct the molecule, we must take into consideration the static and dynamic aspect of the atoms, no less than the awakening and engagement of the definite measures of energy that effect the combinations. Why and how the molecules move are the two questions, the correct replies to which shall reveal to us the complete explanation of all functional movements, and declare how they are produced and maintained or destroyed in functioning bodies.

Pain: You all think you can define that, but you can only give the stereotyped definition which has been given in the text books. Pain is the result of obstructed sensory nerve current. You may have muscular current and nerve current obstructed without having any pain at all. Pain is a friend and not a foe; it is the angel presence that stands at the gateway of functional activity to warn us of the approach of the enemy.

Pain is the result of obstructed sensory nerve current; *swelling* supervenes upon obstructed vascular current; heat is resultant upon obstructions in the neural and vascular channels, by which the mechanical movements of the masses of nerve blood and vascular blood (through impact against the points of obstructions) become changed in the molecular movements which we then *cognize* as heat. These three, namely, pain, swelling and heat, are the only essential factors or necessary concomitants in the process of inflammation. The redness that has heretofore been made an equal factor is a mere incident, as is proved by the fact that some swellings are white; scrofulous swellings and swellings of tumors are all white, so that redness has nothing to do with it.

What, in the next place, are we to understand by quality or mode and quantity or measure of function? and how are we to differentiate these predominant aspects of the complex presence we nominate function of mind and function of body? The function of mind consists of seriated arrestations and releases of the tensions of consciousness or of the power of perception. Simply give attention to a thing and you will catch all that is materially essential to it. Then you are able, in this way,

by having all your consciousness awake, to give predominant attention to the line that most calls for investigation. I want you to comprehend that it is predominant current of consciousness in a certain line that enables you to have clear views and to teach you that it is done in you and for you much more than by you.

The functions of the body are also seriated successions of arrest and release of tensions of molecular and atomic bodies, through which the energy operates to produce molecular, granular, corpuscular, tissual, organic and systematic forms of function in their various manifestations.

Late works on chemistry assert that heat is given out or produced by combinations of atoms, and is taken up or quenched by separations of atoms. Works on physics tell us that "heat is a mode of motion," and that "mechanical motion upon being arrested is converted into molecular motion, which is heat." How, then, are we to account for the heat set free upon the admixture of sulphuric acid and water? How does the friction produce the heat so largely by the mere rushing of the molecules of water among the molecules of acid?

You who are students of chemistry and have attempted to make the combination of water and sulphuric acid, know that it makes a decided disturbance, and will make one of the most tormenting sores in your body that you would care to meet. Now I am going to try to answer how that is done, if you will give me your attention.

The partially engaged, unsatisfied or sleeping bonds of affinity belonging to the atoms in the molecules of water and acid are in a state to be easily aroused into active motion by any impact of current within the sphere of influence, be it direct or oblique, simple or manifold in its advent. We understand the diffusion of water molecules and acid molecules to result from the desire to attain equidistance from each other in the mass of fluid; and the rush to acquire that tension effects the awakening of the sleeping bonds of energy, which, being set in motion, manifest the intense measure of heat always attending this experiment.

If any one has not fully understood me I will gladly furnish him with a copy of this lecture, that he may study it; for until you understand what inflammation and the science of molecular changes are, you are nothing but mere pretenders in your profession. There is an old saying—"He who tells you of your faults and teaches you how to correct them is your best friend," and it holds good in the study and practice of oral surgery as well as in anything else.

20th ANNUAL SESSION

OF THE

AMERICAN DENTAL ASSOCIATION.

HELD AT BOSTON, AUG. 3D, 4TH, 5TH AND 6TH, 1880.

SECOND DAY—MORNING SESSION.

The President, Dr. L. N. Shepard, called the meeting to order at ten o'clock.

THE GIVING OF TESTIMONIALS.

Dr. McKELLOPS moved the following resolution: *Whereas*, It is desirable that the dental profession, as a body, should give countenance to no other material for filling teeth but the best, and encourage the greatest attainable thoroughness in the treatment of diseased teeth; and *Whereas*, of late years many different alloys for the compounding of amalgams have been presented to the profession for their adoption and put upon the market by the manufacturers; and *Whereas*, some few members of the profession have seen fit to engage in the manufacture of said alloys for the formation of amalgams and have used their position as professors to promulgate the doctrine of the superiority of amalgam compounds over all material as a filling for the preservation of the teeth; and *Whereas*, other members of the profession, holding responsible positions in some of our best colleges, have permitted their names to appear in connection with the said advertisements setting forth the many fine qualities and rare virtues of these compounds, thereby giving countenance of a scientific character to the sale and use of these compounds; and *Whereas*, many members of the profession are but slightly acquainted with the many principles involved in the choice of the best material for filling, and very naturally look up to the professors in their scientific character as authority in all such matters; and *Whereas*, there is a peculiar impropriety in professors lending their names to the advertisements of these or any other compounds, inasmuch as charlatans lose no opportunity to exhibit and parade the names of these professors before an ignorant community in justification of their constant use of an inferior material for filling teeth; now, therefore, be it *Resolved*, that this Association discountenances in a formal and emphatic manner the pernicious practice of members of the profession, but more especially those holding high positions in our schools, of allowing their names to appear in ad-

vertisements as endorsing either any special material or compound for filling teeth, or any therapeutic agent whatsoever.

On the motion being put to the vote, it was carried by a large majority.

Dr. W. H. ATKINSON, New York, who voted against the resolution, said that he did so because he held himself to be a free man and he did not wish to put a yoke on others that he did not like to have put on himself. He desired to get rid of the handicapping principle which was illustrated in such damnable resolutions, which said, "Believe or be damned."

DISCUSSION ON DISEASED ANTRUM.

Dr. T. L. BUCKINGHAM, Philadelphia, said he did not like to see the Sixth Section passed without some discussion, for he thought that the subject of diseased antrum, introduced in the remarks of Dr. Morrison, was of sufficient importance to engage their attention for at least a short time. Dr. Morrison's report was a very limited one and confined to one form of the disease, and that in its earlier stages. Sometimes the disease came before the dentist in a far more serious form, when it was necessary, in addition to merely local treatment, to administer a tonic and build up the general system. In cases where there was a lowering of the vital forces it was necessary to do more than remove the local trouble. There came into his hands some years ago the case of an old gentleman between seventy-five and eighty years of age, who had been suffering for six or eight years. He had been treated by different physicians, and had used mild tonics, stimulants and a building-up diet. When the patient came into his (Dr. Buckingham's) hands he was unable to walk about the house even, and the physician's diagnosis was, softening of the brain. Six weeks' treatment, a cleansing of the cavity and a stimulating of the parts diseased resulted in an entire recovery. A slight relapse, two years afterward, was easily got over. Such cases needed to be treated vigorously at the first, and if there was a necrosed bone it must be treated on general principles.

Dr. J. G. W. WERNER, Boston, said that he concluded, from what experience he had had, that necrosis of the antrum was not to be treated by any applications whatever. An operation would have to be performed in such a case and the less they injected the better. The great principle to be observed was to keep the parts warm and stimulate them. Acids were very painful to the patient, and they destroyed the mucous membrane, leaving a painful irritation for a long time. Warm water and a little salt might be used, but aconite and carbolic acid were almost unen-

durable. A case lately came under his care of diseased antrum through the first bicuspid. It broke out into abscess of the antrum. The best results were obtained by simply washing and cleansing the parts, without injecting anything that would irritate.

Dr. W. H. ATKINSON remarked that they had been warned against irritation. Did they know what irritation was? It was a kindly friend, but to push it beyond the point of nutrient irritation was wrong. As to the application, they should avoid warmth where inflammation was, if they knew what was good for the patient. Inflammation was inflammation wherever it might be, and they must either use that which was hot or cold. It was very desirable that they should have their attention called directly to the question as to what constituted irritation. It was a disturbance where it was in excess of the blood-tension. There was one point which it was necessary for dentists to remember, and that was that they never got local inflammation where there was no constitutional deterioration of the juices of the flesh. Sometimes, though very rarely, disease of the mucous membrane might seize on the surfaces of the bone and thereby induce caries or necrosis. But to the man who was conversant with those things there would be but little difficulty in ascertaining if the bones were diseased. If they were, there was only one remedy, and that was a surgical one. Would to God he had the power to wipe out with a besom of destruction all the things that had been published on the subject! Physicians should first diagnose for the sick, and then lead them into the best treatment possible after they had been deprived of their pristine health. That was a subject which actually opened up to them all the foundation principles of medicine. What was medication? It was to supply the body with that which would restore it from deterioration. There were only three modes of this action—first, as food; second, as poison, and third, as remedy. If that classification was remembered and followed out it would not be without its advantages. The angels helped them to a clear understanding of the cases that came under their notice if they would only be in earnest to do their patients good.

Dr. WERNER asked if they could never have inflammation without constitutional deterioration? He thought that in disease of the antrum they had the local without the constitutional.

Dr. ATKINSON said, most emphatically, yes. But no animal in its natural condition ever had inflammation when wounded. All healthy wounds heal without inflammation. Dr. Werner did not discriminate between nutrient irritation and inflammation that was destructive.

Dr. MILLS, Brooklyn, said he was very glad the subject had been dis-

cussed, for it was one that was very obscure in the minds of many of them. He had a case in hand last winter which interested him very much and gave him much practical information. A lady who had been in the hands of another practitioner for two years came to him, and he prescribed the remedy he always prescribed in such cases, and after a time was successful in curing the particular disorder she suffered from, but he found that she was still in considerable unrest. She casually dropped a remark that she often felt a great degree of uneasiness in her face. He made an examination of the place where the pain existed, and found that on the posterior buccal surface of the third molar he could put his probe in two inches. On withdrawing it there came forth a very unpleasant odor. With regard to the treatment, he followed Dr. Atkinson's prescriptions, for he admitted with gratitude that he had followed them before. He satisfied himself that there was no deterioration of the bone in those parts and commenced injection with lukewarm water and a syringe for two days, but he found after syringing that there was a good deal of obstruction and pressure. He continued treating it, and two months after there came a little piece of bone from the socket. The subject of diseased antrum was a very important one, and one they ought all to study.

The Section was then passed.

SECTION FOURTH: OPERATIVE DENTISTRY.

Dr. E. T. DARBY, Philadelphia, in the absence of the Chairman of the Section, Dr. G. W. Keely, remarked that there was only one paper which would naturally come under the head of operative dentistry. It was written by Dr. Patrick, of Illinois, who was not a member of the Association. It had gone before the Committee of Censors, whose duty it was to pass judgment on it, and they recommended that it be read before the Association.

The members of the Section thought that the subject of replanting and transplanting teeth was worthy of discussion. Another subject worthy of notice was that of plastic materials. He (Dr. Darby) was pleased to announce that Dr. Joshua Tucker, of Boston, had consented to address them on a subject which was closely allied to operative dentistry—the working properties of the old soft foil.

Dr. JOSHUA TUCKER, who was received with applause, said that he believed the old system of filling teeth with soft gold to be the true scientific way. He had watched with great interest the changes that had been made in the profession and had heard many discussions on the

subject of cohesive gold, and on its first introduction with the mallet he condemned it. He maintained all along that the principle was wrong. It was true that the cohesive gold would make a more beautiful filling and a better surface, but these things were not all that was wanted. Teeth decayed internally ; there was a circulation going on through the dentine continually, and the mistake was made that by pounding gold against the walls of the teeth that circulation was stopped. It was often found in three or four years that the tooth turned blue. That was owing to the circulation at the back of the gold, which caused the blueness and produced decay. By the old method it was never sought to make the gold solid against the wall or on the floor of the cavity, but to press the particles of soft gold against the wall till the cavity was completely filled. In his judgment the great mistake made in filling teeth in the present day was from not stopping the tubuli—not damming them up. If there was anything true and scientific in the principle of the old method, the nearer they drew to it the better it would be for the profession.

ORAL ELECTRICITY AND THE NEW DEPARTURE. By JOHN J. R. PATRICK,
BELLEVILLE, ILL.

The following is an abstract of a paper read by the Secretary, in the absence of the writer :

At the last annual meeting of this Association I had the honor of reading a paper entitled "Dental Fallacies," and although the present paper bears the title of "Oral Electricity and the New Departure," I consider it in the nature of a continuation of the former paper. * * * The frequent failures in filling teeth with gold by the most conscientious operators—men who spare no pains to perform their work to the utmost of their ability—are too apt to lead them to seek the cause of failure outside of themselves, for no man who honestly does his utmost is willing to suspect a lack of manipulative skill as the cause of his failures. * * * There are other causes that have been equally as fruitful as defective manipulation in creating a belief in the superiority of plastic filling : (1) The continual appeals on the part of patients for inexpensive work ; (2) The ease to the patient and operator in the use of plastic materials ; (3) The more profitable employment, in a monetary point of view, to the operator ; (4) The deep interest shown by the champions and promulgators of this old system revived of saving teeth, in putting compounds of their own manufacture upon the market. (The writer then quoted remarks of Prof. Flagg to the effect that in his opinion plastic material is

safer in the hands of dental practitioners than gold. After this he criticised the published experiments of Dr. Chase.)

Sulphur, iodine, phosphorus, chloride of sodium are also dealt with, after which the writer says: In the selection of filling materials, to secure a good result, it is indispensable that the material used should fit the walls of the cavity perfectly, and that it should exclude completely all those external agencies which induce decay; that it should be solid and undivided in all its parts, fitting it to resist all pressure likely to be brought to bear against it; and finally, that it should resist to the fullest extent chemical action, thermal influence and attrition. So long as we are confined to the use of metals for filling material, there is no metal or combination of metals or substances that has yet been found that can take the place of gold for the purpose. It possesses more of the valuable properties of the force of cohesion than any other agent; it is capable of receiving and retaining additional powers of cohesion by the application of coercive force; its hardness and elasticity are greatly enhanced by its sister metal, platinum; its adhesive properties are superior to the cohesive properties of most other metals—in fact, its power of adhesion is such that in ordinary temperature it will unite under the influence of coercive force almost equal to iron or platinum under heat. Like platinum, it is not influenced by any single acid or alkali; does not tarnish in moist or dry atmosphere at any temperature, and is not affected by sulphur, iodine or phosphorus. * * * *

In recapitulating some of the observations recorded in this essay, I desire to call attention to the following propositions: A voltaic battery cannot exist, excepting in the manner directed by Prof. Volta, the inventor or discoverer. It consists of an equal number of pieces of zinc, silver and pasteboard; the pasteboard pieces soaked in a solution of chloride of sodium, and then with the metals are piled in the following manner: zinc, silver, pasteboard, and so on in the same order, the uppermost plate being of silver, and the undermost plate of zinc. These exterior plates, to each of which a wire is attached, form the terminals or poles of the pile. This was the first of those instruments now so well known by the general term, "galvanic battery." The construction of batteries for the generation of electricity are various and peculiar, both in regard to the material used and the arrangement—thus we have a Swees', a Grove's and a Daniell's battery, each bearing the name of the inventor; and when dentos and gold shall be proved to form an electrical combination and be proved to be a battery, *it* may also bear the name of the inventor. When vapor rises from mercury at the freezing point

of water in sufficient quantity to whiten gold leaf, an amalgam filling subjected to the heat of the human body (98° F.) must gradually part with its mercury by vaporization; this can be demonstrated by selecting a few old amalgam fillings, and after accurately weighing them submit them to a heat sufficient to evaporate mercury. This being done, let the mass cool and again weigh, when the mass will be found to weigh as much as it did before heating. As a further test of the durability of mercury under the influence of heat, take one hundred parts of Fletcher's alloy, add sixty parts by weight of mercury, and allow the mass to harden, then submit it to a sufficient heat to vaporize the mercury and weigh the residue, and there will be found one hundred parts, minus the mercury. Fillings of amalgams taken from the mouth after being in use one or two years and subjected to the same influences, will yield a little mercury—enough to whiten gold leaf, but not enough to reduce the mass ten per cent. in weight.

When an individual, either by bad council or a false economy, has been subjected to mercurial or amalgam treatment for diseased teeth, we find that fifty parts of the mercury out of the sixty used in forming the amalgam are vaporized by the heat of the body in a few years and taken into the system in small but regular quantities—the most potent manner of administering mercury for a constitutional effect. Should not this be sufficient to induce every conscientious practitioner to discard all amalgam from the list of filling material, and be the means of inducing others to be less presumptuous in their speculations and more honorable and resolute in their practice?

Dr. W. H. ATKINSON remarked that in his opinion any committee or censors who read the ignorant verbiage which had been inflicted on them and then commended it as of value to the American Dental Association, needed to go to school. It was abominable for a man who claimed to know something about natural philosophy to go on with the wretched driveling, misconception and misstatements that they had just listened to. Whoever the miserable wretch was that had sent that paper there, he was of the old fogey stamp. Their time ought not to be consumed with such unprofitable trash as they had listened to. If they had the essence contained in the mass of trash just read, it would have occupied about two minutes.

Dr. BUCKINGHAM took exception to the mode of discussing a subject that Dr. Atkinson seemed to have fallen into—that of making depreciatory assertions without giving any evidence. In his opinion, there were some very good things contained in the paper they had just heard read, and it

deserved to be discussed fairly and not treated in the way Dr. Atkinson treated it. He was not prepared himself to discuss the questions raised in the paper, but he protested against a wholesale denunciation of all it contained.

Dr. ATKINSON maintained that listeners needed to discriminate between the things they fancied and the things they knew. He considered that he had as perfect a right to criticise the paper from his stand-point and assert his conviction and how it impressed him as any other member, and he did it religiously and fairly. He had no desire to be unkind, but sometimes men, in exercising the divinest vocation, were obliged to say things that might be construed as unkind.

Adjourned.

ELECTION OF OFFICERS.

The following officers were elected for the coming year on Friday, the closing day of the session :

President, Dr. C. N. Pierce, Philadelphia.

First Vice-President, Dr. W. C. Barrett, Buffalo, N. Y.

Second Vice-President, Dr. Geo. J. Friedricks, New Orleans.

Recording Secretary, Dr. Geo. H. Cushing, Chicago.

Corresponding Secretary, Dr. A. M. Dudley, Salem, Mass.

Treasurer, Dr. W. H. Goddard, Louisville.

Executive Committee, Drs. S. G. Perry, New York; W. H. Morgan, Nashville, Tenn.; T. T. Moore, Columbus, S. C.

Local Committee of Arrangements, Drs. S. G. Perry, A. L. Northrop and Geo. A. Mills.

Publication Committee, Drs. Geo. H. Cushing (*ex officio* Chairman), M. S. Dean and E. T. Darby.

(*To be continued.*)

THE DENTAL ASSOCIATION OF THE UNITED STATES OF AMERICA.

On the eleventh of August and two following days meetings of dentists from all parts of the country were held in the Republican Hall, Thirty-third Street, New York, for the purpose of forming a new dental association of a national character.

Dr. John B. Rich, New York, was appointed temporary Chairman, and Dr. F. M. Odell, New York, temporary Secretary.

After some preliminary discussion, Dr. W. H. Atkinson said that before they proceeded to the formation of a National Association it would be well to ask if such a thing was a necessity? They had one organization now in its twenty-first year of existence, that had done very good work and was improving continually. It was in every sense a National Association. There could not possibly be more than one national body, and that they had already. He would suggest that the question of the formation of a new association be referred back to the committees for consideration, and that they present their reports to the American Dental Association that would meet in New York City next year. There had been some little difficulties arise that he thought might be pleasantly removed, and they might eventually attain the desire of their hearts by co-operating with the societies now in existence, rather than work against them. It was his desire that the whole of the continent should be embraced in a body like that which had been proposed by the committee who had conducted the preliminary work in connection with the new organization.

Dr. R. F. HUNT, in replying to Dr. Atkinson, said that for four years they had been endeavoring to get the American Dental Association to co-operate with them in this national movement. They sought their aid, and Dr. Atkinson knew that they had sought it in vain. It was hoped that the committee appointed last year by the American Dental Association would do something to effect a union of effort and harmony between all the elements of the profession in the country. A copy of the proposed constitution was sent to the committee appointed at Niagara by the American Dental Association, so that they might be able to report understandingly. With that constitution before them, and with a knowledge of the efforts that had been made to set the new organization afloat, the committee reported adversely and the Association declined to co-operate in the movement. In the face of those facts, how could they, without stultifying themselves, postpone the matter another year, for the purpose of asking again for that which had been refused? Members of the profession from the South appealed to the American Dental Association, in 1876, 1877 and 1878, and were repulsed. In 1879 they did not come forward again, as they thought it was no use. Now many of them had come up from the extreme South for the purpose of forming an Association, and were they to be told that they must wait another year on the American Dental Association, for possibly they then might join them. If the American Dental Association would join the new Association they would be heartily welcomed; but although it was a noble body, the

American Dental Association could not be called a truly national body. The only sense in which it was national was that it opened its doors to the reception of members from all parts of the country.

Dr. L. D. SHEPARD, Boston, said that possibly there were some of the members of the American Dental Association present who knew more about the working of the Association than those who had been members for one or two years and had then turned their backs on it. It had been said that the American Dental Association was not a national body. He asked those gentlemen from the South—whose fault was it? Had any one given them the cold shoulder; had not invitations been sent out—cordial, hearty invitations; had not the State societies been asked to send representatives, and when they had been sent, had not they been treated well? Those who had come to the American Dental Association that were specially interested in the proposed new Association, had asked them to disband in their strength for the formation of something. They knew not what that something was—it was in a merely chaotic state.

On the President calling the speaker to order, on the ground that he was not speaking to the resolution, he resumed his seat.

ARTICLES OF CONSTITUTION.

Dr. R. FINLEY HUNT then proceeded to read the proposed Articles of Constitution as they had been drawn up by the committee appointed for that purpose. After they had been fully discussed they were adopted, with slight alterations.

The following is a summary of the constitution of the new Association:

Article I. provides that the objects of the Dental Association of the United States of America shall be the advancement of the profession of dentistry to its proper standing before the world; the extension and perfection of researches and investigations in the science of that profession, and its improvement in every respect; by the union and concentration for these ends of the talents and labors of the members of the profession of the whole country. Also the procurement of the recognition of dentistry as a profession by the United States Government, and the obtainment of its aid and co-operation in the collection and collation of ethnological statistics bearing on the development, structure and condition of human teeth.

Article II. states that in order to make the Association broadly and truly national, and to give the profession in every part of the country a proper share in its conduct and benefits as hereinafter set forth, the

United States and Territories are divided into five districts, as follows : District No. 1.—New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire and Maine. District No. 2.—New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, Kentucky and Ohio. District No. 3.—North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas and Tennessee. District No. 4.—Indiana, Illinois, Iowa, Missouri, Nebraska, Kansas, Dakota, Minnesota, Wisconsin and Michigan. District No. 5.—California, Nevada, Utah, Arizona, New Mexico, Colorado, Wyoming, Montana, Idaho, Washington and Oregon.

Article III. deals with membership of the Association, which shall be composed of dentists who may be elected upon application, which application shall be accompanied by credentials of membership in a State society, or by a recommendation from five members of this Association or of his State society.

Article IV. provides that the Association shall hold its meetings annually. Every fourth year the annual meeting shall be held in Washington, beginning with and from the annual meeting in 1882. The other annual meetings shall be held in the five Districts in regular rotation. The order of meetings will thus be : Annual meeting of 1881 in the First District ; of 1882 in Washington ; of 1883 in the Second District ; of 1884 in the Third District ; of 1885 in the Fourth District ; of 1886 in Washington ; of 1887 in the Fifth District ; of 1888 in the First District, and so on. The meetings held in Washington shall also be international, under such additional regulations for that purpose as the Association may from time to time establish. The quadrennial meetings in Washington shall, besides the usual current business, be devoted to the hearing and discussion of the reports of the sections ; and, in like manner, the three intervening ones, held in the Districts, to the hearing and discussion of papers prepared at the request of the President, and of voluntary papers.

Article V. states that the officers of the Association shall be a President, five Vice-Presidents, a Secretary and Assistant Secretary, and a Treasurer and Assistant Treasurer, and shall be elected by ballot, a majority of the votes cast being necessary for an election. All the officers of the Association, except the Secretary and Treasurer, shall be elected annually, and shall hold their offices until the next annual meeting, or until the election and installation of their successors. The Secretary and Treasurer shall be elected at the quadrennial meeting in Washington, and shall hold their offices for four years, or until the election and

installation of their successors. The President, First Vice-President, Assistant Secretary and Assistant Treasurer shall be chosen from the District in which the next annual meeting is to be held. The Second, Third, Fourth and Fifth Vice-Presidents shall be chosen respectively from those Districts in which the succeeding second, third, fourth and fifth annual meetings are to be held, in rotation, except when the next annual meeting will be the quadrennial meeting in Washington, in which case all these officers shall be chosen from the country at large. The Secretary and Treasurer shall be chosen from the country at large.

Article VI. deals with the duties of officers. After pointing out the work of the President and the Vice-Presidents (which is of the ordinary character for such officers), the article says : The Secretary shall reside in the city of Washington, and shall have charge of and keep properly all the records, archives and properties of the Association. He shall be, *ex officio*, Secretary of the Committee on Correspondence with the United States Government. The Treasurer shall reside in Washington.

Article VII. states : For the purpose of proper and thorough research and investigation, the subjects pertaining to dentistry will be divided and classed as follows : 1.—Dental Surgery. 2.—Artificial Dentistry. 3.—Anatomy and Physiology. 4.—Pathology. 5.—Histology and Microscopy. 6.—Therapeutics. 7.—Materia Medica. 8.—Physics. 9.—Chemistry, Organic and Inorganic. 10.—Metallurgy. 11.—Dental Education and Literature.

Article VIII. provides that the following shall be the standing committees of the Association : Committee on Finance, Committee on Membership, Committee on Appliances, Committee on Correspondence with the United States Government, Executive Committee.

Article IX. is as under: The fee for initiation into this Association shall be five dollars. The annual dues of each member shall be one dollar.

THE FIRST ANNUAL MEETING.

It was decided to hold the meeting in 1881 at New York, on the Monday after the first Tuesday in August.

ELECTION OF OFFICERS.

The officers of the Association for the coming year were then elected as under : President, Dr. A. L. Northrop, New York ; Vice-President of the Second District, Dr. A. Levy, Orange, N. J. ; Vice-President of the Third District, Dr. J. B. Patrick, Charleston, S. C. ; Vice-President of the Fourth District, none appointed ; Vice-President of the Fifth District,

none appointed ; Secretary, Dr. R. F. Hunt, Washington, D. C. ; Assistant Secretary, Dr. J. H. Smith, New Haven, Conn. ; Treasurer, Dr. H. P. Noble, Washington, D. C. ; Assistant Treasurer, Dr. F. M. Odell, New York.

This concluded the business of the session.

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY
OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, April 5th, 1880.

[Continued from page 364.]

Mr. CHARLES TOMES said : Mr. Coles was kind enough to show me his paper in part before it was published, asking me what I thought of some points in it, and I have looked it over with some amount of care since it appeared in full in the *Transactions*. It appears to me that any approximation toward a diagrammatic form on which we can express some of the facts about the jaw is a very great gain. It would be a very great gain, indeed, if we could by means of a compact diagram see at a glance all the more important facts that we wish to know about a jaw, either for the purpose of treatment or for the purpose of comparison ; but looking at the points which Mr. Coles has chosen, though they are useful, I think, for certain purposes—very useful for the investigation to which he seems to have been principally directing his attention—they do not appear to me to be quite the most useful for general purposes. One criticism that I should advance is this : For his base line he takes the medium part of the second molars ; that is to say, he wishes to give as closely as he can the medium line of the alveolar ridge for the extremities of his posterior base line, and he measures forward from that to the incisors for his anteroposterior lines. But for his interbicuspid measurement he takes, not the median line of the alveolus, not the middle of the crowns of the teeth, but the inner surface of their necks. Now, the result of that is that he gets a greater length of alveolus when he comes to compare the anteroposterior length from his posterior base line with his interbicuspid measurement, because any difference in the size of the crowns

of the molar teeth will throw backward and outward his base line and thus increase the anteroposterior length ; but the place at which he takes his interbicuspid measurement is such, that a corresponding variation in the bicuspids will not be represented ; that is to say, his interbicuspid line will be comparatively unvarying, not varying concomitantly with the other measurements. Therefore, the comparisons drawn will be, to a certain extent, fallacious. The interbicuspid measurement should have been taken from a similar point to that at which the base line is measured. Then Mr. Oakley Coles has, for his own purposes, and perhaps rightly, excluded the wisdom-teeth and measured by the posterior surface of the second molars, because the wisdom-teeth are variable. But why, if the wisdom-teeth are variable, should their variations be left out of all account? You are investigating the whole thing because there are variations, and why should you exclude the most variable element? I think I understand why Mr. Oakley Coles did exclude them. Because he wished to get rid of certain variable elements, in order that he might investigate variations in other directions. But this very exclusion, while suiting the diagram for his particular purposes, unsuits it, among other things, for the purpose of comparing the human jaw with that of other animals. So much for the matter of measurement. Then, with regard to Mr. Coles' classification : he divides jaws into dolichoid and brachoid jaws. Now, those two terms are meant to contrast with one another ; but the forms of jaw that he defines and describes are not contrasting forms, and therefore the terminology is, so far, misleading ; that is to say, his dolichoid jaw is a mere matter of proportions of comparative width and length ; his brachoid jaw is one the anteroposterior measurement of which falls below the average ; this is not a matter of proportion, but of absolute lengths. Therefore, those two terms, which one would expect to mean an opposite condition of things, do not. And the same objection in another form has presented itself to Dr. Cobbold, who finds it difficult to apply the description of brachoid jaws. Then several previous speakers have taken exception to the term intermaxillary prognathism, and it seems to me that it is open to a great deal of exception—that it is very much “not proven.” To begin with, a certain form of prognathism is described by Mr. Coles as occurring in civilized races in which the teeth are prominent and stand apart, and the jaw, looked at by itself, quite without regard to the rest of the face, is not what one would describe as a perfect arch with perfect teeth set in it. But, as a matter of fact, the true prognathous jaws of the lower races are conspicuously fine arches.

If you look at the alveolar arch, and the teeth set in it, they are of the utmost regularity—they are not spread out fan-shaped. It seems to me, then, that the comparison rather falls to the ground there. We are comparing a condition which is distinctly morbid with a condition which is not morbid in the lower races, and which in the lower races leads to a remarkably fine jaw, instead of a remarkably poor one. Then, Mr. Oakley Coles tells us that his triangulation of the jaws of some of the lower animals brings out a remarkable resemblance to his intermaxillary prognathous jaws. That coincidence in measurement, amounting almost to identity, seems to me, instead of proving his point, proves something else which is not his point, and which is not this matter of identity; because, if you take a monkey's jaw and compare the sizes of his different teeth, you will find that the proportions they bear to one another are quite different to those of man. Moreover, in the monkey's upper jaw there is a great interval where the lower canine fits up in front of the upper. Now, if, despite all that very remarkable difference, the triangulation brings out results of identity, there must be surely other things at work. We have a triangulation which gives results identical, and we look at the jaws and we find that there are most conspicuous differences ; therefore, I think we should look further, instead of saying at once, "Here we have an explanation of this prognathism occurring in civilized races, and here is a reversion toward the lower type," and so forth. Then, when it is laid down that this condition carried further would lead to hare-lip and double hare-lip, I cannot see exactly on what that is based. I do not see that it is proven, and I think Mr. Coles has made a mistake in the matter of logic when he uses this, which is, after all, only an assumption, and which, after all, can only have a certain degree of probability as a premise in a further argument to prove that in those cases suturation will be arising later than usual, and that, therefore, all these changes which he supposes to take place can take place. I need hardly say that in man the intermaxillary suture joins up so early that it is difficult to understand how the intermaxillary bones can be moved forward, or anything done to them. Then, there is another matter which Mr. Oakley Coles leaves out of account in his estimate of intermaxillary prognathism, and that is this: Supposing you drop a vertical plane from above—from the front of the orbit down to the jaws—what point will it strike in the monkey, and what point will it strike in his intermaxillary prognathous jaw? Unless it strikes the same point, then it seems to me that the comparison again becomes weak. Then, it is stated that the position of the second bicuspid always corresponds with the position of

the second temporary molar. It is so, doubtless, in a normal jaw, where no conditions adverse to its assuming that position come into play, but is it so in every one of these malformed jaws? That, it seems to me, requires proof. I do not wish to criticise Mr. Coles' paper in the smallest degree in any hostile spirit. I think that he has done a good work in endeavoring to reduce to a diagrammatic form all these differences, but I do think that the matter of intermaxillary prognathism should either have been made out more clearly, and the data given more fully, or that it should have been put forward in a very much more hypothetical form. It seems to me that from what he has given here it must be abandoned; at all events, I do not think that it can be considered as established. There are many other points of criticism which are more or less minute, and which I will not detain the meeting with, but which, it seems to me, would go far to overthrow it. I am sorry, in one respect, that Mr. Coles' paper embraces so much. I think it would have been better had he put forward his method of measurement of a few similar forms of jaw and to establish his priority in the matter, and left it to be experimented upon and worked out rather more, before committing himself to so much—because, while I believe the attempt to be one in a right direction, I think that in the carrying out of it in detail there is still much to be considered, and that the scheme, as now put forward by Mr. Coles, will have to be in some points considerably modified before it can be generally adopted.

The PRESIDENT: I think we may congratulate ourselves on the very interesting discussion that we have had on this paper. At this late hour it would be a mistake for me to add anything to what has been said, and this is the less called for, as I feel that the subject has been thoroughly well discussed. I will, therefore, at once request Mr. Oakley Coles to reply to the observations which have been made.

Mr. OAKLEY COLES: I am afraid it will be rather difficult for me to reply in detail to the elaborate discussion which has taken place to-night, but I will endeavor, as far as possible, to follow the points which have been raised. In reference to a remark made by yourself, sir, I endeavored to show in my paper, as far as possible, that I wished to refer to the *forms* rather than to the *absolute measurementis* of the jaw. I have directed my attention rather to the form and to the relation of the measurements to each other than to the absolute sizes, which, of course, would be a matter of great difficulty. Then, with reference to the influence of the sphenoid in its growth on the bones of the face, my observations or conclusions are for the most part based on my reading of Mr.

Hilton's work on the skull, in which he attributes very largely to the growth of the sphenoid, the development of the bones of the face and the character of the features that are produced. Then, there was a query as to the number of cases of prognathism on which my observations were based. I have had an opportunity of observing, and that in a most perfect manner—especially in the case of one female, a family in which a brother and sister, and the two children of the brother, have features of the same character as to the lengthened nose, and so on. Prognathism is distinctly marked in the brother and sister, and it is in process of development in the two children of varying ages, as to the nose and as to the prominence of the jaws. I have models in the case of one child, but I have placed them in the hands of the local practitioner in the country, who is watching the case for me, or I should have been able to show you them. With reference to the ape-like faces of the prognathous and the inquiry as to what central lesions I referred to, I referred to those lesions which are seen in idiocy and imbecility, such as you find especially in Dr. Langdon Down's Asylum. A large number of his cases come from the higher classes of society, and among them you get some of these race characteristics more distinctly shown than in some of the larger asylums, when the children come from a lower class. I have carefully avoided alluding to any value of prognathism or the form of the palate as indicating what will happen, because it would be extremely injudicious by merely basing one's observations on the palate to attempt to form a prognosis as to what would be the future of a child. At certain periods of life idiocy will become developed apart from any congenital taint, and in those cases you find no evidence, in the first instance, that would be of any value for prognosis. The variations between the civilized and the uncivilized jaws are noted in my paper in the classification, in which I go into the dimensions of the jaws of "mixed races," as they are put there, so as not to run too closely into the matter of distinction. The dimensions given there show how very much larger the measurements are in the "mixed races" than in the European races. With reference to Mr. Balkwill, I would say that the curves to which he refers are familiar to me, and that I have got them here (diagrams shown). Here the curves are shown in these diagrams. I have taken the dental outline where it was possible, but as it was not desirable to embarrass the paper with those extra particulars, they were omitted; but they have not been lost sight of. Now, I come to my esteemed friend, Mr. Sewill, and I am sure it would not be well for me to occupy the time of the Society in answering all Mr. Sewill's criticisms. I was extremely glad to

listen to the contribution to the debate by Dr. Cobbold, as it was extremely difficult to get over the difficulty caused by the dissimilarity between the measurements of my cases and those of Dr. Claye Shaw ; but the fact is now explained by the statement that Dr. Claye Shaw's measurements were for the most part from the mouths of idiots, while the averages which I quote in my table are entirely taken from normal jaws. Then, I presume also, there is the difference in not merely the thickness of the mucous membrane covering the palate, but in the extent to which the mucous membrane passes beyond the alveolus on to the neck of the tooth proper, which would give a difference of two or three lines, and that probably will make up the whole of the difference. I had no idea of bringing this paper forward as a perfect classification, or presuming for a moment that it would be accepted as such. My object was to bring forward something that by discussion would ventilate the subject and would induce other workers to investigate the matter, so that ultimately we might arrive at a classification which would be satisfactory. I quite admit the cogency of the remark of Dr. Cobbold, that the description of the palate does not appear from the diagram. That is perfectly true, and it is a point which I do not see my way to get over, except by giving the dental outline from the teeth ; but then you have to deal with the variations in the size of the teeth and the degrees of irregularity to which they may be subjected, which is a point of some difficulty. The influence of the intermaxillary bones I must confess I am inclined to lay great stress upon, and I am extremely glad to have my view confirmed by Dr. Cobbold, although I know that it is opposed and has been opposed by Dr. Claye Shaw. The criticism of Mr. Tomes is extremely valuable and one that I shall certainly take advantage of. I quite see the force of the argument that he uses as to the interbicuspid line not being taken in the same position relatively as the molars. The question that arises in my mind is, whether it would be better to take both from the point of contact of the neck of the tooth with the margin of the alveolus, or to take both from the centre of the surface of the tooth. It is tolerably easy to do so with the molars, but it is not so easy to do so with the bicuspids. It is easy to ascertain what is about the middle of the molars, but it is not so easy to do that with the bicuspids : so that I should be more inclined to take the inner surface of the line of contact of the margin of the alveolus with the neck of the tooth, and then let that be the point of correspondence with the measurement already got from the bicuspids. That, however, is a matter for future discussion, which we shall probably be able to be agreed upon, because

I shall be only too ready to accept that method which seems to be the most likely to bring us to a satisfactory conclusion. As to the prognathism in the lower races, it is unfortunate I have comparatively few skulls that show it well, but I think in many cases of prognathous jaws, such as in the Chinese and Hottentots, there is a certain amount of interdental space which corresponds in some degree with the space that you find in the apes, and which also corresponds with the interdental space which you certainly get in pathological prognathism. Then, that point of obtaining a vertical plane is a most important one and a source of error which I fully recognize, but which I have failed hitherto to see a way out of, because the difficulty is to determine whether it is prognathism of the entire jaw pressed bodily forward on a horizontal plane, or whether it is prognathism of part of the jaw. That is a point very important to determine, but which at present I have no very accurate means of dealing with. I cannot see my way clear, nor have I found any one able to suggest an absolutely fixed point at the base of the skull from whence we may measure the distance to the interbicuspid line, whence would alone enable us to determine the degree of prognathism. I hope that some other person more competent than myself will go on with this investigation, and then, if I have done nothing else, I shall have the satisfaction of knowing that I have helped to bring the subject to the front and induced those better fitted for the task than myself to complete this much-needed classification.

The PRESIDENT: I must confess that I am very pleased to find that this discussion has been so interesting. There are some casual communications which should have been read before the paper this evening, but the discussion has taken so much time that there is now no time to receive them. I hope, however, that the authors will give us the benefit of them at our next meeting on May 1st.

A vote of thanks was then given to Mr. Sewill for his casual communication, and to Mr. Oakley Coles for his contribution to the Museum, and the meeting terminated.

SOUTH-WESTERN DENTAL SOCIETY.

In response to an invitation circular sent to the dentists of Southwestern Missouri and Southern Kansas, a meeting was held at the office of Dr. J. W. White, Carthage, Mo., August 17th, which resulted in the formation of a Society under the above name. A constitution and by-

laws were adopted, and the following officers elected : President, Dr. E. Hovey, Buffalo, Mo.; First Vice-President, Dr. J. O. Haux, Columbus, Kans.; Second Vice-President, Dr. J. T. Lindsey, Carthage, Mo.; Secretary, Dr. G. A. Keyes, Girard, Kans.; Treasurer, Dr. C. F. Wright, Springfield, Mo. Executive Committee: Drs. J. M. White, Carthage, Mo.; L. L. McLeskey, Neosho, Kans.; and G. A. Keyes, Girard, Kans. Board of Censors: Drs. E. Hovey, Buffalo, Mo.; C. F. Wright, Springfield, Mo.; and R. I. Pearson, Kansas City, Mo. After a very interesting session of two days the Society adjourned, to meet at Columbus, Kans., on the second Tuesday in August, 1881.

G. A. KEYES, *Secretary.*

NEW YORK FOURTH DISTRICT DENTAL SOCIETY.

The annual meeting of the Fourth District Dental Society of New York was held in Johnstown, August 17th. The meeting was called to order at three o'clock by the President, Dr. Colgrove. After disposing of the minutes of the last meeting the President delivered his annual address. Dr. A. C. Rich, of Saratoga, then read a paper on "Practical hints for making our Society gathering more interesting and profitable." Incidents of office practice being in order, Dr. J. H. Collins, of Granville, led off by exhibiting some rare specimens of deformed teeth and quack fillings, with a full description of each. Drs. Rich and Colgrove also exhibited specimens of exostosis, five-rooted superior molars, three-rooted inferior molars, etc., all of which were thoroughly discussed, as were also "Plastic Filling," "Artificial Dentures" and "Dental Education."

The following officers were elected and committees appointed : President, Dr. W. H. Colgrove, of Johnstown; Vice-President, Dr. J. H. Collins, of Granville; Secretary, Dr. C. F. Rich, of Saratoga; Treasurer, Dr. A. C. Rich, of Saratoga; Censor, Dr. A. C. Rich, in place of Dr. C. H. Tilton, of Amsterdam, whose term of office expires. Delegates to State Society for four years, Drs. P. Sloan, of Canajoharie, and J. H. Collins, of Granville. Delegates to State Society for three years, Drs. A. C. Rich, of Saratoga, and H. G. Barton, of Argyle. Executive Committee, Drs. A. C. Rich, of Saratoga, J. P. Niles, of Ballston, C. E. Stack, of Fort Edward. Committee to Revise Constitution, Drs. W. H. Colgrove, of Johnstown, C. F. Rich, of Saratoga, and W. P. Weed, of Saratoga. The meeting adjourned, to meet in Saratoga in August, 1881.

AMERICAN DENTAL CONVENTION.

The twenty-sixth annual meeting of the above Convention was held in the Republican Hall, New York, on the eleventh of August. There was no business of interest to transact, and the Convention adjourned.

CONNECTICUT VALLEY DENTAL SOCIETY.

The seventeenth annual meeting of the Connecticut Valley Dental Society will be held October 21st and 22d, at the Haynes Hotel, Springfield, Mass. The meeting will open the first day at half-past ten o'clock A. M. All dentists are invited to attend.

A. M. Ross, *Secretary.*

Chicopee, Mass., Sept. 20th, 1880.

ILLUSTRATED SCIENTIFIC NEWS.

The "ILLUSTRATED SCIENTIFIC NEWS."—This periodical is published semi-monthly by S. H. Wales & Son, 10 Spruce Street, New York, at \$1.10 per year. It has somewhat of the style of the *Scientific American*, and has long been a welcome visitor to our rooms. We have now before us the issue of September 15th, which, although not containing anything that specially raises it above the average, is yet full of matter that mechanics, or those having a taste for natural science, can read with much profit. A cut of Edison's electric locomotive appears on the first page, with letter-press description of the same. An interesting reference to the new process for refining copper; an article on "The world's food supply;" a very important notice of the Official Gazette of the U. S. Patent Office, and of the injustice done to inventors by its premature transmission to foreign countries, follow. Reviews of articles that had appeared in the *Atlantic Monthly*, *Evening Post*, and *London Illustrated Carpenter and Builder*, illustrations of some recent patents, articles on the telephone and "Sound produced by light," are also contained in this number. We do not know how those men who are interested in the class of subjects dealt with in the *Illustrated Scientific News* can better invest \$1.10 than in sending that amount to the publishers for a year's subscription.

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*November, 1880.*—No. 83.

PLUGGERS PHILOSOPHICALLY CONSIDERED.

BY W. H. ROBINSON, A. M., D.D.S., SUISUN, CALIFORNIA.

Beyond question mallets and pluggers, and all the forces and factors belonging to them as receivers or imparters of impacts in plug construction, are under laws that admit of plain demonstration. The writer will be specially grateful to any co-worker who will show that any of his deductions are incorrect.

Observation is the best guide we have in most of the matters of life, even when under its guidance observers come to opposite conclusions. What are commonly called sensorial demonstrations are often erroneous. A close scrutiny of our mental elaborations in such matters would show us that the errors are less in the affirmations of our senses than in our deductions and applications. Two men look at a preparation of dentine—the images of it on their retinæ are the same, so are the impressions on their sensorial consciousness. One says, “an air bubble in mounting”—the other, “an interglobular space.” But some things admit of a mathematical demonstration, and a plunger is one of these things. And so are the laws it obeys when under the momentum imparted to it by an impact from a mallet when impressing gold in plug construction. If you don’t believe me, try this experiment: Suspend a block of wood, weighing four to six pounds, from the ceiling of your laboratory by a broad strap, so as to allow oscillation. Construct a simple wire frame on which you can lay two pluggers so they will move with the least friction,

and when struck by a mallet their points will impress the wood. Now suspend an ordinary lead or tin mallet on a pivot through a hole in the hand end of the mallet handle, so you can raise the head of the mallet any desired distance, and by letting it fall it will strike the plugger against the wood. At this point of contact adjust various pieces of metal of different malleabilities—lead, tin, gold, etc. Have the points of pluggers precisely the same in size and surface, but have one plugger just one ounce in weight and the other just one-tenth of an ounce in weight. Carefully adjust the pluggers against the metal on the wood, elevate the head of the mallet to an accurately measured distance, and let it drop against first one mallet and then the other—say ten times. Adjust the pluggers so that each impact will impress the metal in a different place. Now keep your eyes as wide open as a "Hodontolog" does when he is chasing protoplasmic bodies through the dental canaliculi under twenty-five hundred diameters, and you will learn something. Examine carefully with a good magnifying glass the impression made by the pluggers in the metals. Remember in this experiment all the factors, except the weight of the pluggers, are the same. We raised the one mallet the same distance and let it drop in the same way as the other, but we find the impressions made by the light plugger are uniformly deeper. The evidence of our eyes tells us this. Can we prove it in any other way? Say our mallet weighs one ounce and when it drops we call it velocity ten. The weight of a moving body into its velocity gives its momentum. Under these conditions the mallet would impart half its velocity and add all its weight to the plugger, and the weight of both must be counted in measuring the impact imparted. In this case the velocity of the plugger would be five, its momentum ten, but its striking force or the measure of the impression it made on the metal is the weight into the square of its velocity— $2 \times 5 \times 5 = 50$. When the light plugger received the same impact it would only retard the velocity of the mallet $\frac{1}{10}$, and would receive a velocity of $9\frac{9}{10}$, and its striking force would be the weight $1\frac{1}{10}$ into square of velocity $= 1\frac{1}{10} \times 9\frac{9}{10} \times 9\frac{9}{10} = 107$ (omitting a small fraction). Here the impact of the mallet and all the conditions and factors were the same, except the *weight* of the pluggers. Under the same blow the light plugger made an impression in the metal twice as deep as the heavy plugger.

Apply this demonstration to plug construction, and it tells us that under the same impacts from a mallet, a light plugger has twice the condensing force of a heavy plugger, or conversely (and this is an important fact) the light plugger only requires a mallet impact of one-half the force

that the heavy plugger does to condense gold properly in plug construction. "But," say the advocates of the heavy plugger, "admitting all you say, we can easily adjust the impact of the mallet so as to get any desired impact from the plugger." Such assertions are as unphilosophical and ridiculous as to say that a base-ball and pistol-bullet under the same momentum would produce the same effect on a man's hand. He could catch the one without injury, while the other would destroy his hand.

Let us return to our suspended wood, and readjust our mallet so that under impacts from it, both the light and heavy plugger will make the same impression in the metal. We must be very careful to note all the conditions and so measure the drop of our mallets that under their impacts the pluggers will make *precisely* the same impression in the metal. Into the under surface of the wood stick a piece of wire six inches long—call this the "oscillation index." Now under this wire, and within one-fourth inch of it, adjust a smooth board. When your suspended wood is at rest, place on the board against the oscillation index a small block of light wood, so that when the suspended wood is moved it will move the little block and enable us to measure accurately the oscillation of the suspended wood, as it moves the block just the distance it oscillates. Remember we have the distance our mallet drops so graded that under its impact the pluggers make the same impression in the metal on the wood. Now strike on the light plugger and measure the distance it causes the wood to oscillate. Then strike the heavy plugger and measure. The penetration of the pluggers into the metal was the same, but the oscillation of the wood was about twice as much when the heavy plugger was struck as when the light one was.

Now let us make an application of our demonstration to plug construction and we learn a very important fact—so important, that it is strange that so many have used the mallet for twenty years without formulating this fact into plain words. In two given impacts, from two pluggers, that will have the same welding effect on the gold, one impact may impart twice as much concussion or shock to the tooth and jaw as the other impact; or, in plug construction, when two pluggers weighing respectively one-tenth of an ounce and one ounce are subjected to mallet impacts that give them the same welding force, the impact that comes through the heavier plugger imparts twice as much shock to the tooth and jaw as the impact through the lighter plugger. Our patrons know what shock or concussion from the mallet means, and we are told by them often enough to know which of two pluggers we should use when one imparts twice as much shock to the tooth and jaw as the other.

COROLLARY I. A tooth may be filled with a light plugger without producing pain or disease, when the same filling done with a heavy plugger would produce both pain and disease. To ask which pluggers are best, then, is a proposition too ridiculous to answer. We will experiment a little further with two pluggers weighing respectively one-eighth and six-eighths of an ounce, or as one to six, and adjust them so they will convey impacts from elastic one ounce mallets and impress them on the suspended wood. First, we carefully measure and adjust the drop of the mallet so that the impression made by each plugger in metal on suspended wood shall be the same—*i. e.*, indicate precisely the same striking force. Here you see the advantage of the light plugger. Assume as the unit of measure of this striking force that quantity that will weld No. 1 foil, and say our mallets under the adjusted blow will weld foil No. 36. Then their striking force is thirty-six and the factors of this thirty-six are the weight of the mallet into the square of its velocity. Eliminate these and we have:

	WEIGHT.	VELOCITY.	MOMENTUM.	STRIKING FORCE.
Light plugger,	1	6	6	36
Heavy plugger,	6	2½	15	37½

I suppose all dentists will agree that the impact we want in plug construction is the one that will pack gold properly with the least jar or concussion to the tooth. Bear in mind that striking force represents welding force and momentum—the shock or jar imparted to the tooth and jaw.

COROLLARY II. That impact is best for plug construction that has its velocity factor at the highest practical point, and its weight factor at the lowest.

COROLLARY III. The basal principle in the manufacture of pluggers should be to construct them with the least possible amount of material that will give them the necessary strength. Practical experience shows that pluggers weighing from one-tenth to one-sixth of an ounce have ample strength for heaviest gold and stoutest molars.

[NOTE.—These light instruments will be furnished if called for; the points can be designated by the numbers of the Cone Socket Instrument Catalogue. The D handle answers the description given by Dr. Robinson very nearly, and he has approved it.]

ANÆSTHESIA.

BY ONE INTERESTED.

TRAITÉ D'ANESTHÉSIE CHIRURGICALE, contenant la description et les applications de la méthode anesthésique de M. Paul Bert, par le Docteur J. B. Rottenstein, membre de l'Academie Leopoldina Carolina, de la Société Odontologique de New York, etc. Paris: Librairie Germer Bailliére et Cie., 108 Boulevard Saint Germain.

The need of an efficient and harmless anæsthetic agent available in the performance of surgical operations has been felt from time immemorial. Chloroform has some good qualities, but it has also some bad ones, and those dentists are possessed with no ordinary amount of temerity who administer it prior to the extraction of a tooth. The introduction of nitrous oxide gas as an anæsthetic may justly be looked on as a boon not only to the dental profession, but also to those of their patients who need to have any of their teeth extracted. To many dentists, however, this gas is a *rara avis*, and not only do they know little about its mode of exhibition, but they know absolutely nothing of the why and wherefore of its peculiar effects on the human economy. This is not as it should be. Dentists, as well as other men, should not be compelled to act in anything blindly. It is true that nitrous oxide has not been used as an anæsthetic for a great number of years, and the text-books on the subject are few and far between, besides being of an incomplete and imperfect nature. We hail, therefore, with pleasure the publication of a work which throws some little light on the subject, and in which is collated valuable information not obtainable elsewhere.

The book lying before us, the title of which we have quoted above, deals exhaustively, in its four hundred and twenty-eight pages, with the various agents that are used by the surgical faculty in producing anæsthesia. The author, after referring briefly to chloroform and ether, and their use as anæsthetics, takes up the subject of nitrous oxide gas. He quotes various opinions of eminent surgeons who have administered and experimented on it, and in the general conclusions which follow their reports the question is asked, if nitrous oxide has a direct action on the nervous system and what is that action? The following is a summarized free translation of the author's reply: "The question as to the action of nitrous oxide on the nervous system is a very difficult one to elucidate. It is necessary to observe two things—first, the action of nitrous oxide mixed with air; and second, its action when pure. All the observations

are in accord on the first of these actions—it is the same as was discovered by Humphry Davy, and manifests itself in a very agreeable excitement of the nervous system. But one set of men attributed the complete insensibility obtained by administering gas alone to the asphyxia produced by the interruption in the access of air to the patient; while, on the other hand, admitting that anæsthesia is produced by the inspiration of gas alone, it was contended that asphyxia is not a secondary and hurtful accident, because it hinders the prolongation to too long a time of narcotization by the gas. The inaccuracy of the first of these opinions is evident to all who have had fair experience in using nitrous oxide. Complete asphyxia should not appear till after anæsthesia has been already attained. Besides, the action of nitrous oxide when mixed with air on the nervous system, demonstrates sufficiently that this gas has a special action on the human frame. * * * Out of a number of experiments made by MM. Zuntz and Goltstein, as well as myself, it was demonstrated that the respiration of nitrous oxide exercised a narcotic influence entirely outside of the asphyxia that accompanied it. There remains, however, one grave difficulty to solve—it is as to why narcotic effects are not produced when a person is subjected to a prolonged respiration of nitrous oxide mixed with air. It is by the ingenious experiences of M. Paul Bert that this last difficulty has been solved. He has demonstrated that for the gas to penetrate in sufficient quantity to produce complete insensibility, it is indispensable that the tension of the gas equals that of the atmosphere—that is to say, that under a normal pressure there should be a proportion of one hundred to one hundred. Thus it is necessary to augment the compression by one-fifth of the atmosphere under which the respiration of the gas is made, and thus inhale a mixture of five-sixths of nitrous oxide to one-sixth of oxygen to provoke complete anæsthesia. The experiences quoted above demonstrate that nitrous oxide is really a narcotic, but on the condition that it is inhaled under the tension of a pure atmosphere, or under a pressure surpassing that of the atmosphere when it is inhaled in mixture. The height of the pressure depends on the mixture.

"The third question, as to the harmlessness of the gas, has been sufficiently answered by many thousand clinical observations. The remarkable experiences of M. Paul Bert are conclusively corroborated on this point. * * * He says that during complete narcotization by the gas, the blood preserves its red color and its richness in oxygen, the heart its force and regularity of beating, the temperature of the body its normal degree, and the excitation carried on by the centripetal nerve in the circu-

lation and respiration are the same as are produced in an animal when in health."

In the twelfth chapter the writer deals with the value of anæsthetics in dental surgery. He wisely says: "It is absolutely superfluous to point out here the value of anæsthesia in the work of extracting teeth. There is not one practitioner, not one surgeon dentist, who has not been inconvenienced when extracting teeth with the apprehensions by the patient of excessive pain in the operation. I know well that the use of anæsthesia in the extraction of teeth has been combated both in the French medical press and by many learned societies. But it is purely a matter of form, for I know a good number of eminent doctors who, after having for a long time decried anæsthetics, have been the first to have recourse to them when they had a molar to be extracted. * * * * I could cite a great number of cases in which feeble and debilitated persons have had their health restored by the intervention of the dentist. These persons were dyspeptics, owing to the inefficient state of their teeth, and they would never have consented to the extraction of their carious teeth if they had not been assured that the operation would be executed without pain."

The writer in following chapters deals with anæsthetics and their use in general surgical operations, which we pass over, as they have no special reference to dentistry, but chiefly concern those whose function it is to perform operations of a more serious character and absorbing more time than the extraction of a tooth. We would, however, give here a summary of some of his general conclusions as given in the last chapter. He maintains that chloroform is the most dangerous of all anæsthetic agents, it often causing death by syncope without the operator being able to foresee the accident. Its use should be reserved to exceptional cases, where those who are sick have a great repugnance to ether, obstetric cases, and in the army on the field of battle, where it is necessary to operate rapidly. Ether, which is less dangerous than chloroform, is for various reasons to be preferred before it. Nitrous oxide gas, on the other hand, is infinitely less offensive than either of the above. It acts rapidly, and generally one or two minutes are sufficient to place a person completely under its influence. Its inducement of nausea is the exception, even during long operations. Nevertheless, it is desirable that there should be a certain interval between the last meal and the administration of the gas. Many operators of great experience claim that pure liquid nitrous oxide never produces vomiting. The shock to the system of the other anæsthetics is almost as violent as the operation itself. * * * * Again, one

advantage in the case of nitrous oxide that is not to be despised, lies in the fact that the operator suffers no inconvenience from the gas, as he does not breathe it, whilst it is impossible for him to be completely free from the effects of chloroform and ether when they are administered. The writer also points out the advantages to be gained by using nitrous oxide with ether in certain cases.

Enough has been said by us to convince those interested in anæsthetics that the work from which we have quoted is of more than ordinary value to them. Unfortunately it is a sealed book to many who might desire to study it, owing to its being published in the French language. To those with whom this is no obstacle we commend it. There is an absence of dogmatism in the author's style, and the reader is convinced that the obvious leanings toward liquid nitrous oxide shown by him are the result of firm conviction, personal experience and a considerable amount of research. Those who have so far eschewed all anæsthetics may learn much from it as to the comparative if not complete innocuousness of nitrous oxide, and at the same time of its efficiency in operations of short duration. We offer no apology for extending our notice of this work to so unusual a length, for we regard the subject with which it deals as one of more than ordinary importance and interest to our readers.

DENTAL EDUCATION.

BY DR. J. ALLEN OSMUN, NEWARK, N. J.

A writer in the *MISCELLANY*, a few months ago, deplored the ease with which young men are allowed to enter the profession through the office-door, instead of through the Dental College. He truthfully says, "that from one to two years seems to be about all that is required in the mind of the candidate to qualify himself for entering into active practice," and condemns this method of obtaining an entrance into the profession.

Dentistry claims to rank with the learned professions and should have a high standard for its votaries. That there are thousands of ignorant pretenders, who are a shame and disgrace to the profession, will be admitted by all, and many of them probably came into the profession in the manner indicated—viz., through the "Office Boy's Dental College." Professional schools that matriculate students who are ignorant of the

rudimentary principles of a common school education, who cannot construct an intelligent sentence in their mother tongue, or comprehend what is meant, are to be condemned as not fulfilling their high calling. But the tide is on the rise in this matter. Colleges are striving for the position that all matriculates must have attained a certain grade in general education and mental discipline before being admitted. The sentiments of the profession generally are, too, fast tending in this direction. For instance, the American Dental Association has resolved, "That hereafter no Dental College shall be entitled to representation in the American Dental Association that does not require a good English education as a preliminary qualification for its matriculates, to be ascertained by examination." This is tending in the right direction, and various States have passed laws which debar any one from entering into practice without having a diploma or license from a board of censors, and all States should have such laws.

Now, while I admit the desirability of a dentist being a college graduate, of being educated under the care of competent professors, I cannot but feel that the advocates of this position are just a little inclined to be selfish. That the State boards pass students wholly incompetent no one will question. It is to be deplored that it should be so. But the fault is not with the students so passed, if they have come up to the requirements of such boards. Who is to blame? No one but the examiners. Let us be honest and put the blame just where it belongs.

Many worthy members of the profession are dissatisfied with this method, and rightly so; but it is only because it is abused. I am in favor of a high standard of attainments, both as to general education and professional ability, but the abolition of the board of censors would not be right or just, for there are to-day many worthy young men striving to become dentists who have no wealthy father or guardian to stand behind them and pay their bills—for money is all that is required to obtain admittance to most of our dental colleges. A person may stay there a lifetime, if he will only pay the fees, and this discrimination is not fair. Who is most entitled to praise—he who by hard study, perseverance and pluck has worked by the midnight oil to prepare himself, or one who is carried through by the pocket of his sire? Let the standard be ever so high—the higher the better—but when the student has come up to it, give honor to whom honor is due, and receive him gladly and welcome him to the ranks. Dental schools and examining boards should confer degrees to all who are fully up to their standard of graduation in professional and scholastic attainments, to be proven by thorough

examination. No matter how, where or when the applicant made these attainments, in college or out of it, at home or abroad. What does it matter, as long as the ability is there, how it is acquired? There is sometimes such a thing as natural ability, or bent of one's mind. We find natural musicians, mechanics, artists, etc., and why should dentistry be the exception? There are, no doubt, at the same time, many who go through the dental colleges who will never excel in the practice of dentistry, for they can never have that manipulative ability which is absolutely essential to a successful meeting of its requirements.

It is narrow-minded, and discriminating, may be, against a very worthy person to deny him admission to the ranks, because, forsooth, he lacks the financial means of obtaining a college dental education. As long as he comes up to all the requirements, why should he be debarred from all emoluments pertaining to a successful examination? The great aim of the profession should be to keep out all who will not come up to the standard of its ethics, and if at present there are persons who have been admitted by the State boards who are incompetent, who is to blame? Why blame the young student if he has come up to the requirements? Let the odium, if there is any, rest on those who have failed to raise a sufficient standard. State boards are under no compulsion to pass candidates who are not fully qualified, and if they do, on them, and them alone, rests all the responsibility. In those States where there is no law, of course, there can be no limit, but it is hoped that the time is not far distant when all States shall have laws to protect the people from quacks and that the societies will have the courage to see that they are enforced.

MECHANICAL DENTISTRY.

By E. M. FLAGG, D.D.S., NEW YORK. READ BEFORE THE CONNECTICUT
VALLEY DENTAL SOCIETY.

It has become to-day a very important question for our profession to decide, whether celluloid is to be a failure or a success as a dental plate. Of late there has existed a strong disposition on the part of many members of the profession to evade the subject of artificial dentistry, or ignore it entirely. Its discussion has been more or less excluded from dental associations, and in some cases motions have been made to deny it a place altogether as a branch of dentistry. One might almost suppose,

to hear certain gentlemen speak of artificial dentistry in the manner they do, that they had so far outgrown it, and it had become a matter so simple and all its requirements had been so completely fulfilled, that mental energy bestowed in that direction was a mere waste of brain-power. I claim the contrary. Its requirements have not been fulfilled. An artificial denture is supposed to represent the natural organs in a manner that its expression, character and effect will harmonize with the individual for whom it is made. In other words, that it will be an exact portrait of what the patient's teeth would have been had he preserved them in health to the time when the artificial substitute was inserted. There are many gentlemen in the profession who are wearing artificial dentures, and judged by the test just named there is not one denture in ten but that could be picked to pieces by perfectly legitimate criticism. So much for the requirements of artificial dentistry having been fulfilled. Remarks in this direction might be continued indefinitely.

The necessity for a higher standard of artistic culture in this direction cannot be ignored. It is useless to prate about the number of teeth that are being saved annually. That does not help those who have lost their teeth one particle, and we all know it is no uncommon remark on the part of patients, that it is impossible to make a set of artificial teeth look natural. So far as rubber is concerned this remark is true. You cannot get individuality from a row of moulded porcelain blocks. As well might you expect an artist to make a portrait by selecting from a quantity of manufactured noses, eyes, ears, etc., and joining them together on a canvas. To obtain individuality in work the artist must not be restricted in his ability to arrange any portion of the material which he uses in any manner that he may desire. He may take a single plain tooth and carve and polish it to any form he desires, provided the material be sufficient; but a moulded block, as it comes from the manufacturer, cannot be made by any amount of artistic manipulation to alter its rigid, lifeless expression. So far is this assertion true, that I have had agents of dental depots tell me that they could always detect whether the wares exhibited in the mouths of those they met while traveling were from the moulds manufactured by the house they represented or not. What a comment to be made in a country where our profession is supposed by some to have reached the highest plane of development!

Celluloid has not this defect named in connection with rubber. Single, plain teeth can be used, and the artist is not restricted in giving the highest expression and character to his work. If he appreciates the requirements of his case there is nothing to prevent him from fulfilling

them if he uses celluloid; so I say again, that there is no question so important for the profession to decide as whether celluloid is to be a success or a failure. The defects found to accompany the use of celluloid are as follows: (1) A warping of the material either in the process of moulding the plate or soon after the plate is inserted. (2) Discoloration of the material around the necks of the teeth, soon to be followed by discoloration of the entire plate and consequent softening of the plate. (3) After sufficient softening the plate itself often breaks, which breakage is assisted by the disposition of the material to warp, and the teeth are inclined to drop off by the celluloid shrinking from the pins and the softening of the material around the pins.

The plate at first intrudes itself upon the notice of the patient by a constant taste of camphor in the mouth, and to some patients this effect is very dispiriting, but as the plate becomes discolored and softened, the taste and smell of the celluloid is disgusting in the extreme, and the patient is inclined to condemn a material whose sole defect may lie in the manner in which it is worked. If we go on working it in the manner which we have been taught, celluloid is to be a failure, because there has been no apparatus that will fulfill the conditions required to the production of a perfect plate.

These conditions are as follows: (1) No steam, oil, or other foreign substance must be allowed to come in contact with the material while it is plastic, or it will discolor. (2) During the process of pressing the celluloid one portion of the blank must not be one degree colder than another portion, or it will warp. (3) The material must have its form changed at a heat much higher than is now used, otherwise it will still have a tendency to return to its original position, or, in other words, warp. This superior heat must be obtained in an apparatus that is airtight, for if the superheated material can obtain oxygen either in the form of vapor or a current of air, it will surely burn.

Let us now briefly consider the various apparatus that have been used for working celluloid and we shall see how unfit they are for producing a perfect plate, or if capable of producing good results, we shall see how the labor required will render them impracticable to the mass of the profession.

First, we have the glycerine machine, that produces a plate in which the celluloid had the benefit of a good soaking in this greasy, penetrating compound while the celluloid was in a softened condition, and the pins of the teeth had the additional advantage of being well greased, which left them in a condition admirably adapted to facilitate their future exit from the plate.

In the second place, we had the steam machine, with no thermometer and a valve in the place of it. Our experience with this instrument was that it produced a plate whose texture was not in any way improved by a volume of overheated steam rushing through it while in a plastic condition, and the contact between tooth and plate was anything but perfect. The plaster cast was often softened to such a degree by the hot steam and water that the fit of the plate would be destroyed. The investment would also soften to such an extent that the articulation would be badly impaired. The plunger, running in a steam-packed cylinder, always left us doubtful as to whether the plate or the rubber of the cylinder was making resistance to our pressure, while such a thing as getting a fine dense texture to our celluloid was entirely out of the question. In fact, to enumerate all the defects of this instrument (so much vaunted by the Celluloid Company) would require more space than can be allowed to this entire article.

Another machine had a limited sale and was known as the Heintzmann dry oven. It purported to press celluloid at a dry heat, and was furnished with a large door, the opening of which served the double purpose of allowing the flask to be seen and the cold air at the same time to enter the flask. It also enabled the operator to get one part of his flask very hot while the other remained comparatively cold, and it was with the greatest ease that he could burn one corner of his plate while the other remained so cold that the material would hardly flow. These bad results would be in part due to the misguiding influence of a thermometer that was placed on the top of the machine, which could only register the heat of the iron walls of the heater, and as the burner heated the iron walls and the flask was the last thing to receive heat, the thermometer was therefore of little use.

The fourth machine is known as the "Best," and although far better results could be obtained with this instrument than any of the others we have mentioned, there is probably no other machine that produced so many failures. "Dry, moist air" was not so bad as superheated steam for the texture of a celluloid plate; but any moisture is bad coming in contact with celluloid in a plastic state. It prevents elimination of whatever is volatile in the material, so that the material does not attain a good degree of hardness and cuts under the instrument in a manner known as cheesy. Perfect dryness of the flask is eminently desirable, and this cannot be satisfactorily obtained where there is any unevenness in the application of heat to the flask. Unless the heat is perfectly uniform the plaster is liable to powder and to crack, and becomes unfit for an investment.

In the Best machine, by constant watching and shifting the upper for the lower half of the flask continually, so that they would be alternately presented to the bottom of the oven, we might obtain a comparatively even heat. The directions said, "Wet the finger and touch the heated flask, as a laundress does a flat-iron, in order to see to what extent it would 'fizz.'" This primitive operation was supposed to serve the place of a thermometer and indicate the heat of the flask, but I have to record it as my experience that it was a very unreliable "thermometer," and I doubt that if all evidence could be collected upon the subject of "finger fizzing" (or flask fizzing), it would lead to results sufficiently certain to warrant its use in the working of a substance so sensitive as celluloid is.

So much for the apparatus heretofore used, and if celluloid were dependent for its success upon the machines mentioned we should not have long to wait before it would be generally given up as a failure. A few men of the profession who could give their labor to celluloid as a specialty would have more or less success, but the mass of the profession in the smaller cities, who have to divide up their time between both branches of our specialty, would not and could not afford to give their attention to a material whose best results were attended with uncertainty. For the most part they do not get large fees for work, and failure is with them a very serious consideration. They cannot afford to calculate upon making over plates again. The manufacturers cannot afford to bestow the same expense in the perfection of the "blanks" if their sale is to be narrowed down to a few specialists. Celluloid, as a material, has every advantage that can be hoped for. "Rubber" is known to be unfit for contact with the mucous membrane of the mouth, and "rubber poisoning" is familiar to nearly every dentist. Those who use rubber are victims to a restrictive monopoly. And yet there are probably fifty rubber plates made to one celluloid, and this proportion in favor of rubber will be greatly increased when the license tax upon it is removed.

I have said that celluloid, as a material, is the best that can be used in the mouth, and we will now describe an experiment to prove the truth of the assertion. Take a celluloid blank from the dental depot, say number six and a half full upper (this number covers as much surface as any), pour plaster inside of it, making a model for the blank to rest upon. The blank will fit the plaster model, with the exception of the slight difference to be expected from the "setting" of the plaster. Now, if we keep the blank and the plaster model for six months or a year there will be no change in the fit. The Celluloid Company have not boiled the blank in grease or glycerine. They have not subjected it to a current of

superheated steam, nor have they cooked it in an oven that would heat one part of it more than another. We may take the same blank and put it to soak in the promiscuous contents of our saliva-pump, and there it may soak for six months at a temperature of 100° F. with no change to either color or form. We will now take another blank and mould it in the steam heater upon a plaster cast. We will not put any teeth on it. As our plaster cast will be probably destroyed in the process of pressing, we shall have to make another one to preserve for the purpose of our experiment. The first effect we note is that our steam-moulded plate will smell strongly of camphor and cut under the instrument in somewhat the manner of hard cheese. In about three days the smell of camphor will have left the piece, and while we congratulate ourselves on that effect there will be another effect upon which we cannot congratulate ourselves, and that is that the steam-moulded piece of celluloid will not fit the cast at all. So much for the effect of steam upon the fit. If we now take our steam-moulded piece of celluloid and put it to soak in the contents of the saliva-pump, we shall find that in one week it will begin to dis-color, and in a month will present an appearance as disagreeable as bow-spring rubber.

20TH ANNUAL SESSION
OF THE
AMERICAN DENTAL ASSOCIATION.

HELD AT BOSTON, AUGUST 3D, 4TH, 5TH AND 6TH, 1880.

SECOND DAY—EVENING SESSION.

The President called the meeting to order at 7:30 P. M.

Dr. W. W. ALLPORT, Chicago, expressed pleasure at having heard the remarks of Dr. Tucker in the morning as to soft gold and its superiority over the cohesive. He (Dr. Allport) opposed from its first introduction the exclusive use of cohesive gold in filling cavities. Cohesive gold had its proper place, but it was not in the filling of cavities. Of course it would be right to use it if they had no other. The first thing to do in arresting decay in teeth, was to exclude moisture between the plug and the wall of the teeth. It mattered not whether the moisture would come externally or internally—it must be excluded. That being the

case, the material required was that which could be the most easily manipulated and brought into connection with the walls of the cavity—in other words, to make the best possible filling, they wanted that material that would fit the best to the orifice of the cave. If they took an old filling of soft gold, put in thirty or forty years ago, they would find that it did not look as well as fillings made with cohesive gold to-day, but it saved the tooth into which it was placed. The ordinary operators of forty years ago saved far more teeth than the rather more than ordinary operators save to-day; also more than their college operators save. They would often find a very old soft gold stopping which was perhaps rather rough and uneven, but the color of the tooth would be perfect. He had seen hundreds of soft gold fillings through which an excavator could be thrust, but they succeeded in saving the teeth into which they were placed. But in the present day nothing but the most extraordinary skill would save teeth with cohesive gold, whilst with the soft foil the skill of an ordinary operator would be sufficient. A large majority of the teeth filled with the cohesive gold looked perfect when first done, but if they waited two, three or five years, they would find a beautiful filling, but a blue tooth; decay would be round the filling, from the simple reason that there was a leakage somewhere. Eventually the tooth would break down and the plug be left sticking up like a monument of folly.

Dr. W. H. MORGAN, Nashville, Tenn., remarked that Dr. Allport assumed that because he could not fill a tooth properly with cohesive gold, therefore no one else could. He (Dr. Morgan) could fill a tooth with cohesive gold in as perfect a manner as he could with soft gold, and he wished to enter his protest against the assumption that other men could not do what Dr. Allport had failed to do. When a tooth filled with cohesive gold exhibited a blueness, that was because the filling had been imperfectly done. It was the fault of the way in which the work had been done—not of the material. It was possible to put cohesive gold wherever the other could be put. It was unfair to assume that teeth filled forty years ago with soft foil and which were good now, were filled better than they would be to-day. The truth was, that a very large class of teeth that were filled to-day with the cohesive gold would not have been touched by the operators of forty years ago, unless it had been to pull them out.

Dr. T. FILLEBROWN, Portland, Me., desired to enter another protest, and that was against the idea that in order to use cohesive gold it must necessarily be malletted. Such was not the fact. He knew operators

who used cohesive gold habitually, who did not use the mallet in one-tenth of the fillings they put in. Cohesive gold could be used by hand-pressure just as thoroughly and well as soft foil, and with a great deal less pressure and danger of injury to the tooth; for it did not take nearly as many pounds of pressure to thoroughly cohere the cohesive gold as it did to press the soft gold home to the walls of the cavity. The reason why it was not so likely to injure the wall of the cavity was because a great pressure was more likely to break the wall than a small one. Then, again, there was no need to drill retaining points for cohesive gold. He knew operators—and he was one of them himself—who did not pretend to use soft gold skillfully. He could use it, but not so skillfully as could men who had been accustomed to it for many years. Cohesive gold could be used without a mallet with a pressure not exceeding three or four pounds, while it was necessary to use from twelve to twenty-five pounds in condensing a soft gold filling.

Dr. G. R. THOMAS, Detroit, did not pretend to be skillful in the use of non-cohesive foil, for he was not educated in that school. He began to practice dentistry eighteen years ago and the profession was then entering on the use of cohesive gold. He considered that the profession ran wild over the new invention, and he knew men now who used nothing less than two hundred and forty and two hundred and sixty, making all their fillings of that kind of foil. He believed that there was a middle ground in this matter, and the longer he was in the practice, the less inclined was he to make assertions as to what was correct and what was incorrect. There lived in Detroit a dentist who never fraternized with the profession and never attended any of their meetings, who had been in practice forty years. He (Dr. Thomas) frequently saw teeth filled by that dentist thirty years ago with non-cohesive foil which had saved the teeth as well as if they had never been decayed at all. An excavator could be thrust through the gold, but at the same time the teeth were preserved. He would not advocate filling teeth with soft gold to-day, but there was proof at the hand of every dentist that soft gold was capable of doing excellent service. There was obviously a middle ground. It was true, as had been said, that the more cohesive gold was worked the harder it became—it became like a bunch of burs, unless that very fine work was put on it which very few men could put. doubtlessly there was such a thing as a perfect filling done with cohesive gold, although some gentlemen present were inclined to question that; but there was such a variety in cavities, and in men too, that it was very seldom that a filling was an ideal one. If at any time he had to make

a retaining point, he felt that he was making a very poor filling. He believed that the use of cohesive foil in the hands of young operators was productive of a very great deal of mischief. They should be taught to use soft foil before they attempt the use of the other.

Dr. J. TAFT, Cincinnati, was surprised at some of the things he had heard in the course of the discussion. He was surprised to hear it said that cohesive gold could not be adapted to the walls of an ordinary cavity. If a gentleman said that he could not so adapt it, why that was another thing; but it was not right for one man to judge what others could or could not do in that respect. Cohesive gold could be as well adapted to the walls of an ordinary cavity as non-cohesive. That was a matter of experience. It was proved every day. It had been said that some men used gold foil as high in number as two hundred and twenty. He never knew anybody use it except as an experiment. He knew that there were a great many men who used foil numbered twenty, thirty, fifty and sixty. Some of the best men in the profession used sixty foil, and nothing else. He had seen work done by such men and their fillings were among the best that were ever made, and many of them saved teeth that soft foil could never have saved. He was willing to accord to soft foil all that it deserved—he knew that cavities could be well filled with it. It had been said that some of the fillings put in years ago could be run through with an excavator. For every such case it was possible to find one of a tooth that decayed for a time and yet was never filled, but after a certain stage decayed no further. A great many cases—perhaps a majority of those now filled with cohesive gold—would never have been attempted years ago, when only soft foil was used. He was surprised to hear men speak of the cohesive gold rolling up like bunches of burs. Either men who allowed it to do in that way had miserable instruments with which they manipulated their gold, or they did not know how to use it. Any man who had properly formed instruments and used them with a moderate amount of skill could overcome that difficulty. Remarks had been made about retaining points. He would ask what was the great objection to having a point against which a portion of the gold could be placed? He had never heard any good reason why there should not be such a point made. He would not, of course, advocate drilling into the pulp chamber or weakening the wall unduly; but it could be so arranged as to lay a portion of gold as a man in building a house lays the foundation firmly in its place. Holding cohesive gold in its place with an instrument was a faulty mode of manipulating. It had been said that cohesive gold was liable to “bur” up. He did not

know exactly what was meant by that. Was it meant that when the gold gets into a cavity and the operator tried to consolidate it, it worked itself up into a ball? That of course could be done by an unskillful operator, but in the hands of a skillful man nothing of that kind would occur. He had seen gold so hard that it was very difficult to manipulate, but with the best forms of gold now in use difficulties of that kind need not occur.

Dr. W. H. ATKINSON said that if the members of the Association who spoke would seek to say something useful, more interest would be manifested in the subjects discussed, and there would be less disposition to scatter themselves about as some had done. There was an evident misapprehension on the part of some of the speakers as to what constituted safety in filling a cavity. It had been said that all the disintegrated portions of dentine must be removed to secure good results. That was directly the reverse of good practice—directly the reverse of truth. How should they teach their young men to fill teeth? By letting them watch the practitioner in his best efforts on his most loved patients and see just how the work was done, and not send them to get a D. D. S., or any other nonsense attached to their names, without understanding the significance of it. Much had been said about the material to be used in filling teeth. In his opinion the material had much less to do with it than the knowledge of the mode of manipulation. Many materials that had run well for a season had proved deleterious in the hands of operators. No one could fill teeth well without inspiration; hence the necessity of their examining as thoroughly as possible the condition of the material they used. He was pained to hear men who had common sense enough to eat their dinners say that disintegration could take place without a disintegrant. The time was so short, however, that he would not go more into details, as he desired to keep to principles. He would say that there appeared to be a great amount of misapprehension on the subject of the transplantation and the replantation of teeth, that would be rubbed entirely out if dentists would only study embryology and histology. They would then get rid of a great number of misty generalizations, and would have a chance to get some square common sense about what took place in such cases.

Adjourned.

THIRD DAY—THURSDAY MORNING.

DISCUSSION CONTINUED.

Dr. FREIDERICKS, New Orleans, thought that there was one point in

the subject before them that had been overlooked. They all knew that when a tooth was attacked by caries, calcification of the dental tubuli ensued, and in many cases succeeded in arresting the further progress of decay. He would ask whether, in cases where teeth had been preserved a number of years that had been filled with soft gold, this natural calcification might not have contributed in a great measure to the arrest of the decay? He could not realize how, with the fluids that constantly permeated the filling—a filling so soft as had been represented—there should have been no other factor in the arrest of the decay but the gold. Soft foil or no soft foil, in his opinion the natural results of calcification had a hand in it. He was under the impression that the soft gold question had been settled to the satisfaction of every member of that Association long ago. He concluded, as many other speakers who had gone before him, that it was not so much any specially inherent superior quality in the gold itself that they had to trust to, but to the skill with which it was manipulated.

Dr. LAW, New York, was of the opinion that good fillings could be made with either soft or cohesive foil, and the great question they had to consider was, which could be used with the best advantage, and which could be used with the greatest certainty by the greatest number of operators. He firmly believed that the soft gold was entitled to the preference in all simple cavities—he meant cavities of four walls and very fine cavities of three walls. Of course, if they wanted to extend the model beyond the marginal walls of the cavity, they must use cohesive gold in connection with non-cohesive, or use cohesive alone. But in all plain, simple cavities there was no doubt in his mind that the soft foil was the better. It was more plastic and could be worked better against the walls of a cavity. By the principle of lateral pressure and the wedge principle in manipulating soft gold, that plasticity was maintained, while the cohesive gold soon became hard. He knew that there were many who did good work with cohesive gold, but from his long experience and observation he was satisfied that a great majority of operators could not use it as successfully as they could use the non-cohesive. It had been said by two or more of those who had advocated cohesive gold, that when they saw teeth that had been preserved by non-cohesive gold for thirty or more years, they might conclude that those teeth would not have decayed further if they had not been filled. He maintained that such a conclusion was unwarrantable, although he admitted that it was after all very much a question of skill, yet he contended that soft gold could be used with much more certainty by a large majority of operators and on that account it should have the preference.

Dr. C. S. STOCKTON, Newark, expressed the opinion that many teeth were saved with soft foil that could not be saved with cohesive. He was taught to use soft foil, but he should not like to be confined exclusively to it now. Both the soft and the cohesive had their uses, and both could be used successfully in the same operation. Some gentlemen appeared to think that the two kinds of foil could not be united. That was not so; for he had seen some of the best of fillings, that had preserved teeth admirably, in which a large portion of the work was done with soft foil and then finished with cohesive. He had in his mind a case that came from a city in the West. The operator, who was one of the best, had performed his work originally with cohesive gold. The filling failed, and another gentleman from the same city took it in hand and filled it with soft foil, capping it with cohesive. The result was in every way satisfactory and the filling would undoubtedly preserve the tooth. Time was a great deal in these cases. In filling large cavities with four good walls, they could send soft gold to the walls in one-third of the time that it would take to do the same with cohesive gold.

Dr. W. H. WEBB, Lancaster, Pa., denied that soft foil fillings could be more quickly put in than those of cohesive gold, if the latter was properly used. What did the gentleman mean by "soft gold"? The term had been used without its being stated if non-cohesive gold or cohesive gold to a certain degree was referred to. All pure gold was cohesive, and if gold was non-cohesive, then something had been done to it to make it so. He had seen many non-cohesive fillings that had been put in by good operators where the gold had scaled off, and especially in cases where persons were advanced in years. In the buccal surfaces of teeth, where the whole of the wall was decayed, there was no question that cohesive gold was the proper material to use.

Prof. I. J. WETHERBEE, Boston, desired to enter his protest against the claim that cohesive gold could not be used successfully for the perfect filling of all cavities in teeth. Notwithstanding the instances that had been cited where soft foil had been in teeth for thirty or forty years, he yet maintained that cohesive gold was capable of preserving any tooth that could be preserved by soft. It mattered not whether they filled teeth with unannealed foil or annealed, some operations would fail in the course of time if even they were performed by the best of operators. He had seen fillings of soft gold through which an excavator might be thrust, but the reason the teeth did not decay was because the tissue was good. He did not believe in using soft foil in large proximal cavities—he invariably used pellets. If there was any doubt as to his getting

them in position, he would make a small retaining point and fill that with cohesive foil, and hold it in position with the left hand while it was worked with the right. When their respected friends, who were now the champions of soft foil—and he accorded them much respect for their large and noble experience and character—when they had been thoroughly instructed in the use of instruments, they would change their minds and see their errors revealed.

Dr. MILLS, Brooklyn, said that he had learned something from the remarks of all the speakers. When they considered the many auxiliaries which were brought to bear in the work of saving teeth, he thought that there were other things that claimed their attention, as well as the kind of gold they used. He held that a man who showed earnestness in urging his patients to keep their teeth and mouths clean and healthy, did more, if even he was possessed of only ordinary ability, to save teeth, than a man who was a far better operator who neglected to give that advice. He regretted that they had not heard more about the duty of the profession to the patients in this matter. He often saw work which had left the hands of men of ability, judgment and good understanding, but there was every sign that they had altogether neglected to tell their patients what was their duty in the matter of cleansing their teeth. He did not speak then of "gutter dentists," but of members of the profession generally. Since being in Brooklyn he had had a number of patients come to him who had been in other men's hands, and only one single case could he recall in which the patient's mouth bore the marks of real health and cleanliness. He considered this was a very important side of the dentist's duty. He did not expect to see much reformation with the adult part of the profession—the men more advanced in years—but he hoped that they would be able to get their young men to take hold of the question. Old men were not very impressible, and did not like to take what they regarded as a back step, and acknowledge that they had not done as well as they might and that they would do better in the future. He agreed thoroughly with Dr. Allport in some of his remarks, but there was a danger of some interpreting his words as being an encouragement to the more easy-going style of filling teeth. Dr. Allport did not mean to convey any such impression, but it was liable to get abroad, nevertheless. Referring to the question of heavy gold, the speaker said that he used gold up to thirty, forty and sixty—the latter more than any number. He had always found it a great success. There was a mistaken idea abroad that heavy foil needed a heavy action to use it. He could use heavy gold with the

same facility that he could use the lighter kinds. It was astonishing how little force was required to cohere heavy gold under circumstances which were easy for its adaptation. But after all, however much they might discuss the different properties of gold, they could not but recognize that there was an individuality in every man, and one man used gold in a way that another could not.

Dr. G. F. WATERS, Boston, quite agreed with the last speaker in his remarks that the operator had something else to do besides merely filling a tooth. He had to caution the patient as to keeping the mouth in good condition, for patients had quite as much to do with the preservation of their teeth as the operator. Some years ago a young man came to him to have his teeth cleaned. He had no idea of cleanliness in his mouth—never rinsed it out, left the food all round his teeth, and altogether his mouth was in a bad state, although his teeth were excellent. He (Dr. Waters) felt that he should like to say something to him that would shock him—something that he would never forget. He said, "My friend, I have a great many patients that are very fastidious, and if I were to handle your mouth it would take me a long time to scrub and clean my hands. Do what you can for yourself, and if there is anything you cannot do come to me and I will help you." He did not know just how hard he had struck, but the young man got up and in a modest way begged pardon and went out. Twenty-five years after, as he was getting out of a car one day, a man stepped up and asked if he would like to look at a set of teeth? He replied that if he had a set which he wanted to have looked at, he did not mind. The man then opened his mouth and showed a most beautiful set of teeth—the gums were perfect, there was not the slightest discoloration to be seen. He said, "I did that job myself and feel proud of it. You do not think it would make your fingers stink to put them in here now, do you?" [Laughter.] After a further conversation he recognized the man as the same person whom he had tried to shock twenty-five years before. He narrated that incident just to show what advice would sometimes do, with the hope that other dentists would seek to do more to prevent as well as arrest decay of their patients' teeth.

The Section was then passed.

SECTION V. ANATOMY—ANÆSTHESIA.

The following is an abstract of a paper read by Dr. W. C. Barrett, Buffalo, N. Y., on Anæsthesia:—Man has always sought refuge from the penalties of broken law, to avoid the pain naturally consequent on disordered

functions, but until the nature and action of the so-called anæsthetics became known his efforts were at the best incomplete. There are a number of different states which may be induced, in which, while the condition remains, the patients are insensible—such as coma, syncope, anæsthesia and sleep. The first three are pathological ; the last is the normal condition of recuperation and recovery of wasted force. All these states or conditions depend on the nervous supply, and are induced by normal or abnormal nerve currents. * * * * The mysteries of the nervous supply, or of the nerve force, have never yet been bared to human eyes. At present it is impossible to say how some of these principles effect their marvelous purpose. It is known that the action is simply reflex and the nervous system is affected through certain definite organs. But there are others of which this seems not to be true, and the scientific world is engaged now in endeavoring to solve this mysterious problem. So far, comparatively little progress has been made, and since the day of Claude Bernard, who advanced the idea that such agents as directly affect the nervous function do it by a coagulation more or less complete of the protoplasmic elements of nerve tissue, nothing very definite has been advanced.

Of the various impressions which medicinal agents may exert on the nervous function, let us confine ourselves to that state called anæsthesia, as the most important to the practitioner of dentistry. Narcosis or anæsthesia may be considered as a state of paralysis of the sensory nerves, producing insensibility or complete stupor. It is a suspension of sensation and is the effect of a number of agents. * * * In warm-blooded animals it is produced by cold, and in cold-blooded animals by warmth, or a rising of the temperature. The most common agents used to produce an artificial anæsthesia are nitrous oxide, chloroform, sulphuric ether and bromide of ethyl. But carbonic acid and several other gases may produce the same results when inhaled. How do these agents produce these effects? As I have said, this question has not, so far, been satisfactorily answered. But there are certain facts which have been ascertained that may help us in coming to a decision on the subject.

Claude Bernard says that an anæsthetic is a drug which produces a direct impression on warm tissue. Professor Anstie says that the peculiar effects are through a modified blood supply. Each of these teachers has followers, bringing abundant facts to sustain his hypothesis. Which is right? It is certain that anæsthetics are amenable to the law which is universal in therapeutics, that to produce its characteristic effects a drug must be introduced into the system and that the method of its action is

through the blood supply. This is amply demonstrated, and I have performed numerous experiments to make me familiar with the fact. * * * The most characteristic effects of anæsthetics are produced when their vapor is inhaled. Why is this? Because it is thereby most readily introduced into the blood. The immense surface (about fourteen hundred square feet) presented in the lungs brings the blood into contact with so much of the vapor that the pulmonary circulation is completely charged with the drug, and thus distributed to the remotest part of the system without opportunity being given for its elimination. * * * * Microscopical and other examinations show that the drug changes the character of the complete corpuscle. You are doubtless all aware of the effect that carbonic acid produces on the blood. It makes bright arterial blood dark in color. Carbonic oxide has a directly contrary effect. It makes venous blood bright. Ether, if it be mixed with blood, gives it a dark purple color. It prevents its re-arterialization, and not only this, but it changes the character of the blood corpuscles. Chloroform turns the blood a brilliant scarlet. It has not such a powerful influence to dissolve the corpuscles as has ether, but it certainly destroys great numbers of them. (Dr. Barrett here illustrated his remarks by an account of some of his own experiments with various animals, made with a view to watch the effects of anæsthetics on them.)

Asphyxia is the result of a lack of oxygen supply to the medulla. The lungs have nothing to do with the desire for breath, nor has the condition of the blood, any further than from its effects on the medulla. In asphyxia the blood is dark in color, not simply because of the absence of oxygen, but because of the presence of carbonic acid, which has the power of changing the appearance of the corpuscle, and there is the same appearance of the brain—or of the cerebrum, at least—as in anæsthesia. The conditions of asphyxia and anæsthesia are, then, analogous in many of their characteristic appearances, but I shall endeavor to show that there is a wide difference in the pathological condition. * * * One is the cessation of function in all the anatomical elements—the other is but a partial suspension in some of them. There are the same or analogous changes in the condition of the corpuscles of the blood, and yet the pathological condition of the patient is very different. The one is the complete absence of oxygen from the medulla—the other is the complete oxygenation of the anatomical elements. In anæsthesia the medulla may be destroyed without causing death. Many experiments lead me to believe that in the asphyxia produced by carbonic acid gas any lesion of the medulla is as fatal as when not under the influence of any-

thing, for I have repeatedly killed animals instantly by a very slight injury to the medulla when they were asphyxiated to insensibility. The true anaesthetic is an agent which may exist in the blood in sufficient quantities to produce insensibility to pain, and yet whose presence in these quantities is not incompatible with continued existence. An asphyxiating agent is one which, while inducing unconsciousness, is incompatible with continued life. As both states are continued by the same physical symptoms, and yet one so widely variant, it would appear that they must be induced by different means. As asphyxia is demonstrably a change in the blood corpuscle, it would seem as if anaesthesia is due to some profound and specific effect produced directly upon nerve tissue. (Dr. Barrett then referred to an experiment he had made on the head of a frog, which he considered demonstrated that anaesthesia affects nerve force when ordinary function has ceased.)

The relative safety of the most commonly employed anaesthetics has been much discussed. That we cannot with perfect impunity so far interfere with normal conditions as to suspend many of the functions of life, must be patent to all. But are there degrees in the risk to be run, and if so, which is the safest agent? For all practical purposes we may assume that there are three agents—chloroform, ether and nitrous oxide. I have conducted a long series of experiments for the purpose of obtaining light on this subject. At one time I thought I had succeeded, and a repetition of the same experiment, giving the same results, almost electrified me. But another series, undertaken to fortify my mind and to make assurance doubly sure, upset my fondly cherished theories, and taught me that truth does not reveal herself hastily or to the experimental novice. * * * * The progression of anaesthesia is gradual. It does not take and overwhelm the whole nervous system at once, but first, it takes the cerebral hemispheres; second, the spinal cord; third, the general ganglionic system; fourth, the respiratory ganglia. * * That the great danger in the administration of any anaesthetic is in allowing the patient to breathe an atmosphere too highly charged with the vapor, is incontestably proved, and must be accepted. * * * In the use of chloroform, ether and nitrous oxide there is a certain train of symptoms, each following the other with considerable regularity, but not with the same degree of intensity. The first stage of anaesthesia is one of excitement. There is an increase in the flow of blood, a dilatation of the capillaries and a contraction of the iris of the eye. This is especially marked in the case of chloroform, and in the administration of this agent the excitement period is sometimes very violent, and it is at this

time that the danger is imminent in cases of lesion of the heart. Under the stimulation of the sympathetic, if the heart be weakened by fatty degeneration, its spasmodyc struggles may result in embolism, when, as is usually the case, the muscular coats of the arteries are weakened through the irregular action of the heart, or that action itself may become paralyzed, through its inability to respond to the exertion demanded. Death occurs, then, either through spasm of the heart or paralysis of the sympathetic. * * * Another symptom attending this stage, or immediately preceding it, is a choking sensation or feeling of suffocation, attended frequently with spasmodyc coughing. This is another sign that the vapor, whether of chloroform or ether, is not sufficiently diluted. * * * The next physiological sign in narcosis is a contraction of the arteries, due to a still more profound impression of the agent on the terminal filaments of the vaso-motor system, and the beginning of the loss of sensation in the extremities, which gradually extends toward the vital organs. * * * My opinion is, that if chloroform be properly administered and closely watched, it is not as dangerous as it has been represented; but its administration absolutely demands the services of a skilled expert, for as it is a more powerful agent than any of the others, it requires greater care in its exhibition. Especially should the iris of the eye be watched, for though in its later stages the pupil is expanded, care must be taken that the entire relaxation of the iris, as in coma, be not approached. * * *

The great danger in the administration of ether is from the arrest of respiration, and this is due either to the paralysis of the sympathetic or more often to the filling up of the smaller bronchi by mucus. * * * In nearly all cases of death from ether, it will be found that bronchial râlis and stertorous breathing preceded death: the latter symptom being due to paralysis of the pharynx.

Of nitrous oxide, or of the new anæsthetic, bromide of ethyl, time forbids me entering upon the consideration. The first, which is the especial refuge of quacks, is of use only in brief operations. With the last my own experience has been anything but pleasing. My own experiments in the use of chloroform and ether would lead me to use especial caution in the case of the former, to see that there had been no indication on the part of the patient of a weakened action of the heart, as exhibited by fainting and dyspepsia; to use especial caution that he was not addicted to the use of alcohol, and be particularly careful to sufficiently dilute the vapor till the excitement stage had passed. Finally, I would carefully watch the later stages of anæsthesia, and suspend the administration of the agent at the first indication of any excessive dilata-

tion of the pupil of the eye ; of stertorous breathing or relaxation of the muscles of mastication, as these are governed by nerves which arise from the medulla and indicate danger to the sympathetic system.

(*To be continued.*)

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY
OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, May 3d, 1880.

ALFRED WOODHOUSE, Esq., President, in the chair.

The minutes of the previous meeting were read and confirmed.

Mr. MORTON A. SMALE signed the Obligation Book and was formally admitted to Membership by the President.

The PRESIDENT announced that the following gentlemen had been proposed for election and would be ballotted for at a subsequent meeting :

Mr. GURNELL E. HAMMOND, L.D.S., Eng., 43 Leinster Square, Kensington Gardens, W., Resident.

Mr. WALTER PAXTON HARDING, L.D.S., Ireland, Bronala, Carnarvon, North Wales, Non-resident.

Mr. THOMAS S. CARTER, L.D.S., Eng., 26 Park Square, Leeds, Non-resident.

Dr. WALKER read the following letter from Mr. Oakley Coles, who was unable to attend the meeting :

Mr. PRESIDENT : "At a recent meeting of the Society I referred to a patient of Dr. Ferrier, as an example of epilepsy due to dental irritation. I have since heard from Dr. Ferrier that it was a case of epilepsy *with* dental irritation, but not dependent on it. Under these circumstances my criticism of Dr. Ferrier's letter at the last meeting falls to the ground, and I desire to withdraw it. I may further state that the patient on whom I operated, though relieved from the one anticipated seizure, has since been as bad as ever, thus justifying Dr. Ferrier's diagnosis of the case."

Mr. SEWILL said that after what had been stated by Mr. Coles at the last meeting and published in the *Transactions*, it was only just to Dr. Ferrier that the explanation should be made quite clearly. It was not the fact that Dr. Ferrier had made the suggestion as to the probable effect of removing the teeth, which he was stated to have made, and it was not a fact that the patient had been cured: she was as bad as she had ever been; indeed, Dr. Ferrier considered this to be one of the most intractable cases of epilepsy which he had yet met with.

The PRESIDENT announced that Mr. F. Canton had presented to the Museum the jaw of a cat affected with cystic disease.

The SECRETARY then read a communication from Mr. Tod, of Brighton, which accompanied a model of the mouth of a patient, aged twenty-two, whose teeth had been regulated in her youth, the left upper canine having been removed with excellent results. Quite recently Mr. Tod had removed the right upper canine, and he intends shortly to extract also the right upper first bicupid. Mr. Tod called attention to the extra molar on the right side, which, although it greatly resembled a temporary tooth, he took to be a supplementary molar. It was quite firm and level with the rest of the teeth, and its color and general appearance were unlike those of a persistent temporary tooth. He offered the model to the Curator for the Museum, if it should be thought of sufficient interest.

The PRESIDENT said he should be sorry to differ from Mr. Tod, but, so far as he could judge from the model, the tooth had certainly all the characteristics of a temporary molar, and he thought that this was the more probable explanation of the case. The fact that the tooth was firm in the jaw was no argument against it.

Mr. G. H. HARDING made the following communication respecting the insertion of gutta-percha fillings:

I have met with considerable difficulty in the insertion of gutta-percha fillings in proximal cavities in front teeth, owing to the tendency of the two fillings to stick together. The first filling is easily inserted, but when the second is undertaken the hot gutta-percha one is using, and also the hot instruments, are so apt to stick to the first filling, that I have sometimes found it difficult to avoid injuring the first filling, and even in some cases entirely displacing it.

To obviate this, I used formerly to hold some thin material—such as lead foil—over the first filling with the thumb and finger while inserting the second, but this method was not very satisfactory. The following plan, which I now adopt, is very simple and removes all trouble in this

respect. Having filled and finished off one of the fillings, I cut a strip of gummed paper—ordinary stamp edging answers the purpose—of sufficient breadth to cover the first filling, over which the strip of paper, after being moistened, is placed, and the ends strapped over the surfaces of the adjoining teeth, one end on the lingual, the other on the labial surfaces. This holds it firmly in position, and gives the operator plenty of room to work at the cavity, which is then filled and finished off ; after this, all that is necessary is to pass a strip of cotton wool well saturated with water several times between the teeth ; when the gum is sufficiently softened the paper will slide off, leaving the first filling intact.

Mr. HARDING also showed a model of a curious case of irregularity. Although one of the deciduous molars had remained persistent it had not prevented the eruption of the bicuspids, which had taken up their places one on each side of the temporary tooth. The fact that the bicuspid tooth is generally considered to vertically displace its predecessor rendered this case interesting.

The PRESIDENT said it was certainly a very interesting case ; he had never met with one precisely similar, though he had seen several instances in which the bicuspids had moved considerable distances, both backward and forward, without in the least losing their proper vertical position.

Mr. MOON said that some months ago a very ingenious little apparatus for regulating teeth had been sent to him by Mr. Williams, of Leamington. Having found that it answered its purpose very satisfactorily, he had brought it for exhibition to the Society. It consisted of a vulcanite plate to which a short tube was attached opposite the teeth to be acted upon ; inside this was a sliding tube and through this an elastic band played.

The PRESIDENT remarked that although the apparatus looked a little more complicated than some others which had been designed for the same purpose, it was certainly very ingenious, and no doubt also very efficient. One advantage was that no harm could be done, however long the patient might wear it, as the teeth could not be brought back beyond their proper positions; hence frequent visits would not be necessary.

Mr. VANDERPANT showed, for Mr. Crapper, of Hanley, a specimen of osseous union and transposition of two teeth.

OSSEOUS UNION AND TRANSPOSITION OF TWO TEETH.

The specimen which I have the pleasure of submitting to your observation I removed from the left side of the lower jaw of a young woman

about twenty-two years of age. She came to me complaining of great pain of a neuralgic character ; her face was much swollen and accompanied by partial deafness on the affected side. There was some difficulty in examining the case, owing to the patient's inability to open her mouth sufficiently ; however, I perceived what appeared, from its position, to be a badly decayed wisdom-tooth ; the surrounding parts were much swollen, covering the space which ought to have been occupied by the second molar (the first molar was present). With some difficulty I succeeded in removing the tooth referred to, when, to my utter astonishment, I brought another tooth away with it. On inspection I found that what I had believed to be the wisdom-tooth was in reality the second molar, while the real wisdom-tooth had erupted in front of the second molar and had pushed the latter backward. The specimen is, I believe, one of true osseous union, which becomes more interesting by the abnormality of the relative position of the teeth. I saw my patient a few weeks subsequently and all bad symptoms had subsided

The PRESIDENT said he thought that Mr. Crapper was mistaken as regards the transposition. It appeared to him that the diseased tooth was the second molar, and that the one behind was the wisdom-tooth.

Mr. VANDERPANT also showed for Mr. Crapper a lower plate encrusted with a large mass of salivary calculus, and read the following account of the case:

SPECIMEN OF SALIVARY CALCULUS.

Some years ago a lady consulted me respecting her teeth. I found it necessary to remove the fangs of the lower incisors, in order to adapt a temporary case, which was secured by clasping the canines. The teeth were fixed on gold plate, and the gutta-percha still present in the specimen was placed underneath to relieve direct pressure on the somewhat tender gums. Contrary to expectation, the patient did not return at the time appointed to have a permanent case supplied. I lost sight of her for about five years; in the interim she had constantly worn the piece. Finally she was obliged to consult me again, owing to the loss of the canines. On examination the large mass of salivary calculus was found deposited, which I removed in conjunction with the plate. The loss of so large a substance startled my patient, and she imagined that a large portion of her jaw was coming away. The gums were considerably congested. It is a remarkable fact that notwithstanding the bulk of the deposit it had not materially interfered with her comfort, and had she not been compelled to visit me again she would have continued wearing her case, without in the least suspecting the presence of the inter-

esting specimen which I have the pleasure of submitting to your inspection.

Mr. CRAPPER had also sent for exhibition a celluloid plate made by Best's process, some cases of continuous gum work, and also of blocks, and a curious old plate made one hundred and fifty years ago, which he presented to the Museum.

Mr. VANDERPANT also showed a plate encrusted with salivary calculus, which had belonged to one of his own patients.

Mr. S. J. HUTCHINSON showed a similar specimen. In this case the plate had been worn for four years without removal.

The PRESIDENT then called upon Mr. Arthur S. Underwood to read his paper on Nerve-Stretching in Neuralgia.

ON NERVE-STRETCHING IN NEURALGIA. BY ARTHUR S. UNDERWOOD.

MR. PRESIDENT AND GENTLEMEN:

Having been much occupied lately in hunting up records in the various medical publications upon the subject of neuralgia, I have repeatedly met with notices of obstinate and rebellious cases, that, after every other remedy has been tried and failed, have succumbed to nerve-stretching. Such cases, isolated among other matter, and occurring singly, at intervals of months, produce a less forcible impression upon the mind than when placed in juxtaposition and considered in mass. This, combined with the fact that it takes a long time for such cases to make their influence felt on the current books, must be my apology for the communication I have the privilege of reading to you. I may add, perhaps, that the members of this Society have so much to do with neuralgia, that the profession must gain from the discussion of this interesting question by those who are constantly occupied in studying it.

A great variety of irritating causes may bring about neuralgia—a carious tooth, a piece of dead bone, an abscess, lead-poisoning, chlorosis, rheumatism, syphilis; but whatever the cause may be, it is the opinion of Troussseau that the neuralgia itself is always *only a symptom*.

A foreign body—such, for instance, as a pivoted tooth—may cause no neuralgia at all; again, it may cause a slowly developing neuralgia, and one easily dealt with; lastly, it may cause neuralgia of that rapid and resistless form so graphically described by Troussseau as “epileptiform,” and of which he says that it resists “with a disheartening obstinacy all therapeutic measures, so much so indeed, that even now, after more than thirty-six years of practice, *I have never known it to be cured in a single case radically.*”

Here is such an uncompromisingly unfavorable prognosis, from such an authority, that it is no small evidence in favor of the operation to which I wish to draw your attention, to find that the disease in its most aggravated form *has* been cured radically by nerve-stretching.

Simple trifacial neuralgia will, in the majority of cases, yield, fairly readily, either to the extraction of some guilty tooth, or to the administration of some one of the innumerable drugs with which every one is familiar. But there are cases, and not so infrequent as we could wish, when all these means fail; when the only palliative, for a long time, was the division of the nerve, an operation affording, too often, only temporary relief, as the mischievous condition remained, and only waited for the reunion of the cut nerve and the re-establishment of the interrupted nerve-current to display its terrible phenomena again.

To illustrate this form of neuralgia I will quote three cases. In one drugs only were employed, in another neurotomy, and in the third nerve-stretching.

In 1852 a gentleman of about forty years of age, a captain in the army, came into my father's surgery. He had scarcely sat down in the operating chair when he suddenly sprang up as if electrified, his face became deeply flushed, and a profuse perspiration poured out from every pore in his skin, his teeth were clenched together, and he convulsively swept his handkerchief over his forehead, uttering a subdued groan, which ended in a deep sigh of relief; the paroxysm was over—it had lasted a few seconds only, but its short presence had been terrible enough. This brief moment of agony he assured my father recurred with the utmost regularity *every five minutes night and day*. For ten years he had not known what it was to be ten minutes free from this torment: between the paroxysms he slept and even dreamt at night.* He had consulted every medical man of any eminence in Europe, he had taken every reputed drug, and nothing had had the slightest effect. His misery had more than once driven him to the verge of suicide. Such a ten years' suffering might well overturn a man's reason.

The second case is one that happened to Rousseau. To quote his own words: "This poor patient had for many years been subject to the convulsive form of neuralgia. His paroxysms lasted sometimes a few seconds only, and sometimes a minute; they recurred whenever he spoke, drank, or ate, or whenever one touched with the tip of a finger

* It may be interesting to state that these brief dreams were the happiest moments of the sufferer's life, seeming, as they did, to extend over whole years and years of peace.

the few teeth which he had left. The pain was seated in all the branches of the trifacial nerve of one side, but chiefly in the infra-orbital division. Several of the nerve trunks had been divided already, but the relief *had been only temporary*, and the pain had always obstinately returned after an interval of from a few weeks to a few months. The extraction of his last remaining teeth gave him no relief. Prolonged application of a solution of cyanide of potassium did some good. But the pain still returning, as awful and as unbearable as ever, I decided upon dividing the infra-orbital branch. Bonnet performed the operation with great skill; the patient was relieved instantly, and remained free from pain for several months. The following year I saw him again, suffering in the same way in the course of another nerve of the face, and with the same convulsions. Professor Roux, as far as I can remember, again divided several nerves. Lastly, in 1841, Dr. Piedagnel saw in his wards at La Pitié this same individual, whom he had known thirty years previously, when house physician at the Saint Antoine Hospital. The poor man's face was scarred from the surgical operations which he had undergone, for whenever the pain became intolerable he implored the help of the knife, for this at least gave him relief for a few days, and sometimes for months." Here is a history of agony bearing ample evidence of the necessity of some mode of operative interference more potent to deal with this obstinate disorder than neurotomy; the knife is sometimes plainly only at best a palliative. The first case defied drugs, the second was only half conquered by the knife. The third case I shall quote is quite as intense an instance of suffering—in fact, it is impossible to conceive that the history of physical pain can contain anything worse.

In May of 1879 Dr. Grainger Stewart, returning from his autumn holiday, found that a patient had been placed under his care suffering from epileptiform neuralgia. For fifty-three years this man had lived a comparatively happy life, a temperate, prosperous man, enjoying perfect health, among pleasant surroundings. He was a station-master in the north of England, and had been, in the pursuance of his duties, somewhat exposed to weather and draughts. In 1862, at fifty-three years of age, he was attacked by facial neuralgia. Once begun, the disease gradually increased in severity; the paroxysms occurred each time after less and less intervals of peace; but for the remission life would have become intolerable. The attacks lasted between six and eight weeks, the periods of freedom varied from a few weeks to a year. Never feeling secure from his enemy, his mind had no real peace. I will quote Dr. Stewart's vivid account of a paroxysm: "His face would suddenly

change; twitching of the muscles on the right side of the face set in, leading to the strangest grimaces; the agony began simultaneously with the movement, and was most intense in the lines of distribution of the middle branch of the fifth nerve on the right side. The patient would seize his head with his hands and press the painful part with the utmost violence; would drive his knuckles into the space beneath the malar bone; would slap his face, tear his hair, twist his body in all directions, and sometimes lose all self-control and shout in his agony. This would continue for a few seconds, or perhaps a minute or two; then the pain and other symptoms would subside. The paroxysm might recur almost immediately, or not for hours; generally they were most severe in the evening or during the night. They were induced easily by touching the skin, or pulling the hair of any part of the area of distribution of the affected nerve, or by touching the gums or tongue. Mastication had thus become impossible, and all food had to be taken in a liquid form; and no effort was spared, by the use of tubes or other contrivance, to smuggle it past the sensitive region; nine teeth had been extracted, in the hope of obtaining relief, but without benefit." Here is a tale of distress almost bordering on romance. The unfortunate old man had submitted to various treatment without effect: he had had teeth extracted, taken opium, had morphia injected, and had tried most of the specific drugs. Dr. Stewart, encouraged by a previous success in a case of sciatica, resolved upon stretching the affected nerve. First, the infra-orbital nerve was stretched at the foramen, and the operation was followed by a month's immunity; after that period the paroxysm returned, but the locality of the pain seemed transferred to the mental foramen. The mental nerve was cut down upon and stretched, and since then the patient *has never suffered a twinge of pain.*

Here is, then, a case quite as violent as either of the other two, in which permanent relief has been afforded by this simple operation. The testimony is surely very strong.

In searching through the records of cases published during the last two or three years in various papers and pamphlets, I have found the notes of thirty-nine cases in which nerve-stretching has been done. Of these fourteen were done for facial neuralgia, twelve for tetanus, ten for sciatica, and three for neuralgia of the arm. Of these thirty-two were complete and permanent successes; two were relieved of pain, but died from accidental causes (one from secondary hemorrhage, and the other from erysipelas). In the five remaining cases the operation was done for tetanus. In one the disease had progressed so far that the medulla

was already greatly implicated; of the other four, two were performed by Mr. Nankivell, and two by Mr. Watson, and in each case the disease was abated and life prolonged for some days, though the patient finally succumbed; and notwithstanding the fatal result, Mr. Watson says, at the end of his report, that the operation did undoubted good, and that he should not hesitate to perform it again. On no occasion, then, has the stretching of a nerve done harm, and this is an important point, for the other operative procedure, with which one feels instinctively that nerve-stretching must contest the palm—I mean neurotomy, or nerve-dividing—has been attended with unpleasant results. For instance, it has happened that the healing cicatrix has enclosed and gripped the cut and swollen nerve ends with its re-forming fibrous tissue, and produced a new neuralgia, perhaps worse than the first. Again, if the nerve divided be a mixed nerve, paralysis of the parts supplied by it must follow its division, and in any case loss of sensation will result until the nerve unites again, and then, in all probability, the pain will also return. Dr. Brunton also referred to an experiment of Schiff's, of division of the inferior dental nerve in one of the lower animals, which was followed by dimness of vision, due to partial paralysis of the ophthalmic branch. The only permanent good that can arise from division of the nerve, if it is to reunite, must depend upon the division of the vessels supplying it. That neuralgia is always attended with a vascular disturbance is, I think, quite established. Only a few weeks ago the members of this Society had the privilege of listening to a most original and lucid account from Dr. Brunton of these vascular phenomena; they were described as being a kind of vascular colic, the vessels being tense at one point and relaxed at another. Trousseau found neuralgia yield on some occasions to division, not of the peccant nerve, *but of the arteries supplying the part*. Dr. Erb states that Nussbaum and Trousseau have even gone the length of *tying the carotid* to allay obstinate trifacial neuralgia, and have met with wonderful success. Moreover, the same author states it to be his opinion that, ignorant as we are of the pathology of neuralgia, it is highly probable that the secret of the nervous disturbance is a state of neuritis. Whenever any changes have been observed in nerves affected with neuralgia, they have been those of simple inflammation. The vessels of the neurilemma have been found injected; a plastic effusion has been found surrounding or lining the nerve-sheath; adhesions have been found between the neurilemma and the surrounding tissues.

Dr. Erb further suggests, that not improbably in those cases of neuralgia where no changes at all have been discovered, neuritis had been

present, but was either too slight or too transient to be obvious to our present methods of investigation. From these facts it would appear that neuralgia is a vascular phenomenon; and herein, perhaps, may lie the key to the great success that has attended nerve-stretching as a treatment in obstinate cases. It is easy to conceive that nerve-stretching may act as a revulsive; besides freeing the nerve from any adhesions that may have been formed between it and the surrounding tissues, the wrench may permanently rectify the morbid state of the small vessels. It is evidently more desirable to correct the disturbance, the presence of which is evidenced by the pain, than to prevent the nervous system from testifying to the presence of the mischief by temporarily interrupting the current, leaving the mischievous condition uninterfered with. Herein lies all the difference between a permanent and a temporary cure. The *rationale* of the treatment at present, however, lies too far in the regions of speculation. There is a veil of obscurity lying over the exact pathology of this disease, which science has hitherto attempted in vain to pierce. The best authorities confess that, as yet, we do not know anything for certain about it. This want of knowledge does not, however, diminish the pressing necessity of agreeing as to the best practical method of allaying the agony it causes. Till more is known of the minute pathology of the disorder, rival methods of treatment must be judged by success alone: and from this practical point of view there can be no doubt that hitherto the results of nerve-stretching entitle it to rank very high as a last resource in those rebellious cases where all reputed drugs have failed, and life has become a burden to the sufferer.

M. Blum, in his interesting memoir upon this subject, in the January and February numbers of the "Archives Générales de Médecine" for 1878, tabulates thus the circumstances under which nerve-stretching is justified and called for:

1. In neuralgia that resists therapeutic treatment, and is limited to a certain nervous tract.
2. When the neighboring nerves show a tendency to become implicated.
3. In neuralgia of traumatic origin, especially when there is reason to suspect cicatrical adhesion between the nerve and the surrounding tissues.
4. In neuralgia affecting stumps.

In his *résumé* he states that the efficacy of the operation is due principally to the modifications which it brings about in the structure of the nerves, and above all in the circulation, not only at the spot where the stretching was done, but even at points more or less distant from the wound.

The discovery of this operation depended upon a curious accident. In the year 1869 Nussbaum was operating for excision of the elbow-joint. The patient had been suffering from permanent contraction of the little and ring finger on the side about to be operated upon. During the operation, the assistant was directed to keep the ulnar nerve out of danger from the knife by protecting it with a spatula. Owing to some accidental cause, the patient's arm was suddenly jerked, causing a violent wrench to this ulnar nerve. The accident was scarcely noticed at the time; but when, after recovery from chloroform, it was observed that the contraction had disappeared, and did not return, the operator's attention was drawn to the fact, and he was led to try the effect of a similar wrench in similar cases, with a like result. After this the operation was performed by Nussbaum, Billroth, Callender, Lister, and many others, for sciatica, tetanus, epilepsy, neuralgia, etc., and the success that attended their experiments placed the operation upon its trial as a recognized procedure in surgery.

Before closing this paper, which I feel has already detained you too long, I should like, with your permission, to say one word concerning a curious and important symptom, much insisted upon by Troussseau, which I have noticed in all the reports of cases I have read has been universally omitted from mention. It is as inexplicable as most other points connected with neuralgia; but as Troussseau states, after an experience of nearly forty years, that it is invariably present in violent cases, it is certainly deserving of notice. I mean pain following pressure made over the spinous processes of the neighboring vertebrae. In cases where the fifth or the occipital nerves* were affected, pain is always felt on pressure of the occipital protuberance, or the spinous processes of the first two cervical vertebrae. When the nerves of the brachial plexus were affected, pressure on the spine of the last cervical vertebra gave pain. So also with intercostal, lumbar and sciatic neuralgia, the corresponding vertebra were always painful to pressure. This pain did not, however, occur at first—not until, probably, the mischief had spread to the spinal cord; and until this pain occurred, Troussseau did not consider the case to be one of neuralgia, but of mere local pain. To illustrate this, he quotes a case of toothache arising from the presence of a false tooth with a pivot. At first the spinous processes were not tender; but when the pain had spread along the inferior dental nerve, had involved the superior maxillary, and, lastly, the ophthalmic, the processes became tender on pressure,

* Troussseau states that these nerves are almost invariably affected together.

and the case was one of neuralgia. I think this point is surely worthy of observation in the record of cases. Troussseau himself offers no explanation of the phenomenon in the case of the fifth nerve: in fact, he states that anatomically it is impossible to explain it.

It remains for me to add that the cases I have referred to have all been severe ones. In one instance, the list of drugs that had failed to produce any effect would have startled the Pharmaceutical Society—nitrite of amyl, opium, morphia, arsenic, chloride of ammonia, gelseminum, quinine; but I need not enumerate the formidable array. All the drugs and applications proved useless, and nerve-stretching effected a permanent cure. I have only selected cases of an aggravated kind, and of these only such as have been published during the last three years; and I think, considering the results, the Society will confess the operation has wonderful facts to speak for it.

Thanking you for your patient attention, gentlemen, I may add that the relation of your personal experiences on the subject of neuralgia will, I am sure, give a value to the evening which I could not have hoped to have resulted from my paper.

The narration of the details of a succession of cases greatly resembling each other being excessively wearisome to any audience, however patient, I have refrained from incorporating any such list in my paper, in the hope that I may be permitted to append it to the published account in the *Transactions* of the Society.

LIST OF CASES OF NERVE-STRETCHING.

The Practitioner. Vol. xviii. Two cases recounted by Mr. John Chiene, of Edinburgh. Complete cure, no motor or sensory loss. 2

Archives Générales de Médecine. Jan. and Feb., 1878. M. A.

Blum gives the results of eighteen collected cases. Three died from accidental causes; in two the neuralgia was cured, but the patients died, one of erysipelas, and the other of hemorrhage; the third was a case of tetanus not treated in time.... 15

Lancet. July, 1878. (Vol. ii., p. 6.) Dr. Macfarlane gives notes of a case of obstinate sciatica that had for nine months resisted all treatment (morphia injections, aconite, opium, belladonna, quinine, iron, chloride of ammonium, strychnia, arsenic, phosphorus, potass, iodidi, zinc, actaea racemosa, turpentine, all tried and failed); complete cure..... 1

Carried forward. 18

	Brought forward,	18
<i>Lancet.</i> Vol. ii., p. 323. (1877.) Two cases by Paul Vogt and Hy. Petersen, cured.....		2
<i>Lancet.</i> March 2d, 1878. Nankivell, two cases; both failed. Operator thought failure was due to his not having stretched nerves sufficiently.		
<i>Lancet.</i> Feb. 16, 1878. Watson, two cases of tetanus; neither lived, but in both the disease was mitigated.		
<i>Edin. Med. Chir. Soc. Trans.</i> May 15, 1878. During discussion on Eymington's paper, Bell mentions one case and Chiene four others cured.....		5
<i>Brit. Med. Journal.</i> 1877. Vol. ii., p. 866. Heath, of Manchester Infirmary, gives once case of sciatica, complete cure.....		1
<i>Brit. Med. Journal.</i> May 31, 1879. Dr. Grainger Stewart gives one case of neuralgia quite cured.....		1
<i>Ditto.</i> June 14, 1879. Chas. Higgins, of Guy's, two cases of supra-orbital neuralgia quite cured.....		2
<i>Ditto.</i> Oct. 18, 1879. Reference to a case published by Kocher in the <i>Correspondenz Blatt</i> , 11 Nov., 1879, supra-orbital neuralgia, cured without loss of sensation.....		1
Cured.....	30	
Failed.....	7	
		37

(To be continued.)

PEEPS INTO THE MAGAZINES.

By "ALERT."

In an article devoted to a consideration of the care of the mouths of patients who are under twenty years of age, reprinted from the Transactions of the Connecticut Valley Dental Society in the *Dental Register*, Dr. L. C. Taylor advocates a "thinning out process" amongst the teeth of many of the young people who come under the dentist's care. The article throughout advocates strongly also the desirability of the dentist seeking to prevent as well as cure disease. In proportion to the knowledge the public obtains of the desire on the part of dentists to prevent disease, will their confidence in the profession increase. Dr. E. G. Betty, in some remarks on the question of compensation for dental services, maintains that every man has his price, and that some men, by

virtue of their consummate skill, must always command high fees, while men who are necessarily lower on the ladder must be content with more moderate demands. Under the head of "Diversion" the editor gives an article in which he peremptorily insists that if dentists drink whiskey they should abandon the dental profession. We do not say that we disagree with this advice.

We have been highly pleased with an article by Dr. Louis Ottosy in the *Dental News*. He condemns with vigor and pertinence the filthy custom which is all too prevalent among dentists of America of chewing tobacco. Smoking is bad enough, and we can scarcely imagine a person with sensitive olfactory organs going to a dentist twice who smokes. But a chewer of tobacco is not only foul-breathed but filthy, and when he forces his objectionable presence on patients, it is by the most abnormal stretch of the imagination that he can be called a gentleman. Of all men in the world the dentist should avoid tobacco.

Is the condition of the Southern medical man just as it is described in the *Virginia Medical Monthly* by Dr. Cullen? He maintains that the war demoralized the people in its literal sense—that is to say, robbed them of their morals—and as a consequence they do not pay their doctors' bills. The natural result is that doctors starve. If things are as black as he paints, we tremble when we wonder how Southern dentists live.

It strikes us forcibly that if there were a few more vegetarian colonies started, such as are sketched in the *Herald of Health* (New York), dentists would have a desirable opportunity of studying perfect sets of natural teeth. People who live on cereals, herbs, vegetables and fruit, uncooked, are not likely to suffer much with their teeth, provided they exercise due care in other matters pertaining to sanitation besides that of food. Such colonies, however, are not very popular, and despite a solitary example the world will still go on eating what was never intended to be eaten, and demanding the care of the dentist.

The *British Journal of Dental Science* records four cases of death in England from the use of chloroform. In one of these cases the patient was having some teeth extracted, and after a portion of the operation had been performed she swooned back and expired in five minutes. Nitrous oxide gas was not used, because the dentist had to remove too many teeth. There are several contributions to the magazine before us which point to the pleasing fact that dentists in England, as in America, are fast improving their position as a profession. Recent legislation in Great Britain has done much toward this end, and the medical schools of the

land are now showing themselves willing to make arrangements for teaching dentistry to dental as well as general medical students.

Our German friends have a somewhat formidable quarterly publication in the *Correspondenz Blatt für Zahnärzte*, published at Berlin, by the house of Messrs. Claudio Ash & Sons. It contains more than one hundred pages of reading matter, is well printed on excellent paper, and its general appearance would indicate that the dentists of Germany are not, after all, in quite so sorry a plight as some persons picture them to us. It is true that a good proportion of the reading matter is provided by American and English writers, but the fact that such an excellent publication finds sufficient support in the Fatherland is strong evidence of the good standing of dentistry in the country.

The *Dental Advertiser* says very truly that a vulcanizer is not a thing to be trifled with. Occasionally an explosion takes place which illustrates this fact. There are some dentists who neglect to read all circulars, directions or rules that are sent them with vulcanizers, and the result is that they often learn through the somewhat severe school of experience what might have been learned in a much easier way. It should be sufficient to warn dentists, and especially those who are comparatively inexperienced, to exercise care in the use of apparatus in which such a force as confined steam is present. That such warning is not unnecessary is proved by the accidents which every now and then take place.

We gather from the current number of the *Dental Fairus* that the "Cogswell Dental College" in the far-away West is sadly in need of funds. The College property was given to the dentists of the Pacific coast in May, 1879, but five thousand dollars are still needed to fit up and furnish it with the needful appliances. Dr. Dennis, one of the Professors elect, epigrammatically suggests that more money and less ink is needed to promote the healthy and rapid growth of the college.

BOOK NOTICE.

THIRTY-FIFTH ANNOUNCEMENT OF OHIO COLLEGE OF DENTAL SURGERY.—A pamphlet bearing the above title lies before us. The prospectus for the year promises much that is valuable, and the synopsis of the course of study is of the usual character. There were sixty-nine matriculates during the past year and thirty-one graduates. Judging from appearances, there is every prospect of this somewhat venerable college—as dental colleges go—doing much good work in the future.

THE BRITISH DENTAL ASSOCIATION.

The annual meeting of the members of the midland branch of the British Dental Association was held at the Memorial Hall, Manchester, England, on the 6th of October. The report of the Council was submitted by Mr. Waite, of Liverpool, the honorary Secretary. The Council nominated Major Stewart, of Liverpool, as Vice-President of the branch, and recommended that the annual meeting in April next should be held in Liverpool. An analysis of the dentists' register showed that one thousand four hundred names had been enrolled of gentlemen engaged in the practice of dentistry in the midland counties. Of these about one-half were registered as practicing in conjunction with pharmacy. An increase of members, both of the Central Association and its separate branches (the report continued), was absolutely necessary to enable the executive to carry out the provisions of the Act, and there was little doubt that with moderate effort others might be induced to join. The Association was destined to represent the profession in the future, and it was their duty to make its representative character a living result, and no mere empty name. The report was adopted.

The Chairman (Mr. H. Campion, of Manchester), in his opening remarks, said that they must all feel that the scheme for the elevation of their profession had been most judiciously planned and had been most efficiently carried out. The scheme, while it in no way discouraged the attainment of the higher qualification of full membership of the College of Surgeons, provided an efficient education in all those scientific and practical subjects which it was necessary for a dentist to know, and by means of the dental diploma afforded the public a guarantee that the possessor of that diploma had passed through a curriculum of such a standard as fully to qualify him for the practice of the branch of surgery which he professed. The objects of their Association was to render assistance, as far as possible, to the provisions of the Dentists' Act: the general consideration of the subjects affecting the interests of the profession: the reading and discussion of topics on dental surgery and mechanical dentistry, and on the cultivation of a generous professional spirit among practitioners throughout the district. The Dentists' Act, he reminded them, guaranteed to the public that for the future any one who claimed the professional title should of necessity have obtained the necessary qualification.

Mr. KING, Shrewsbury, then read a paper on the use of plaster of Paris in taking impressions of the mouth; and Mr. Cropper, Hanley,

read a paper on "New Ideas in Mechanical Dentistry." In the evening the members dined together at the Queen's Hotel, Mr. Campion presiding.

NOTES.

Dental Education.

A few months ago Dr. W. H. ROBINSON made some very pertinent remarks in the MISCELLANY on the "Office Boy's Dental College." He described this institution as "the most degrading incubus that the dental profession has ever labored under." He maintained that "it is cursing the profession and the world by filling them with shrewd, ignorant, quasi dentists." Having denounced it as vigorously as was necessary, our contributor asked what was to be done to remove the evil. In the present number of the MISCELLANY Dr. J. ALLEN OSMUN deals with the same question in an article entitled "Dental Education." One of his propositions is that although the profession is seriously weighted by the "graduates" of the office boy's dental college, yet the advocates of a system which would not allow any to practice as dentists except those who had studied under competent professors are "just a little inclined to be selfish." We believe that the time is fast approaching when State laws will be so stringent and so well enforced, that it will be impossible for men who are not thoroughly educated up to the standard, say, of the graduates of the best dental colleges to practice as dentists. It is all very well to be kind and to stroke the head patronizingly of the lad who would very much like to be a dentist, and who perhaps possesses considerable manipulative skill naturally, without the means to study in college. But a line must be drawn. In being what might be considered kind to him, and allowing him to practice without a college education, we

know not how many of his future patients we are injuring. The foremost men of the profession are doing all they can to elevate their calling; but their efforts will be seriously discounted unless the State laws are conformed to, even though in some cases they may appear to deal severely with individuals. There is an eternal principle represented in the words, that that which is worth a great deal costs a great deal. Let dentists and students bear this in mind. It means that if dentistry is to rank with the learned professions, it will cost a man a great deal in labor, study, and perhaps money to enter it creditably. We may add that when it does take a higher rank—which it assuredly will ere long—admission to it by the office door will be utterly impracticable. At the same time, a thoroughly earnest and smart man who may be poor will not be necessarily excluded from the profession. If he chances to live in a State where a college course is not demanded, he may, by sheer hard work, fit himself in his spare time, although the examination he may have to pass will be as thorough as that which he might have submitted to him at college. If, on the other hand, his State laws demand a college education he need not be discouraged but, as many have done before him, he can by rigid economy and strenuous efforts support himself while studying at college. Such a severe method is not easy. But there are some men who make circumstances, instead of allowing circumstances to thrust them from side to side. Such men will force themselves into the profession by dint of indomitable perseverance and natural ability.

JOHNSTONS'

Dental Miscellany.

VOL. VII.—*December, 1880.*—No. 84.

WEST COAST DENTISTS AT VARIANCE.

As a rule, it is a bad plan to look a gift-horse in the mouth. The act savors of ingratitude and perchance you may lose considerably by it. If you want the horse it is far better to take him with thankfulness, for, after all, it is a horse, and is capable of doing some work. There is, too, a onesidedness about a gift which renders it comparatively easy for the receiver to admit that he is a gainer by the bargain. There are, unfortunately, some men, who, while they are in sad need of a horse and cannot raise the money to buy one, grumble in an unconscionable fashion because one which may be presented to them by a munificent dispenser of charity has some defects, which to a more grateful soul would not be noticed. They peer around it anxiously, examine all its parts, and act generally as though they were buying the animal, and were in great danger of being swindled.

All this is, of course, intended as illustrative. A worthy dentist on the Pacific Coast, now advanced in years and retired from his profession (Dr. Cogswell), entertained the laudable desire to perpetuate his name and aid the cause of dentistry by founding a college in San Francisco. He has started by giving a building and site, which Dr. W. H. Robinson, of Suisun, says is worth \$10,000 to the profession—putting the gift at its lowest cash value. Now, starting with this initial fact that the doctor has made such a present to the dentists of the Pacific Coast, we decline to accept the statement which is freely made by some that the gift is

of no account, and that in the matter of starting a college the dentists of the West could do better to ignore it altogether and start one on their own responsibility. We regard available property that is worth \$10,000 as of some account, and as a rallying point of some tangible value. But, say the malcontents, "the conditions are such that we cannot accept them." From all that we have read, the only "condition" which is so objectionable, is that the institution should be called the "Cogswell Dental College." If there are other "conditions" to hurt the susceptibilities of the dentists of the extreme West, then it is the fault of those who have written on the matter that they have not placed them before us. If there are no other objectionable "conditions," then we say that it is childish to be hurt at this.

We regret to find that this subject is not being discussed in a way that is at all commendable. A writer in a magazine before us asserts that if the property that Dr. Cogswell has given had been "available for anything else the dental profession would never have heard of it." Such an assertion is gratuitous and uncalled for. Something stronger might be said about it which would be equally true. The same writer further on says: "It is about time for some one to get after Dr. C. with a vinegary pen." We regret that too much "vinegar" has already been imported into this discussion, and it cannot but impede progress in the attainments of the profession, besides creating an antagonistic feeling between individuals.

It is stated that a King of Siam used to send to each of his courtiers against whom he had a grievance a white elephant. He did this to ruin the recipient, and generally the plan succeeded admirably. Now in these days some gifts are undoubtedly white elephants. Those who are grumbling at Dr. Cogswell and his liberality, maintain in so many words that his gift is a white elephant. Were it possible for them to prove it such they would have just cause for complaint. But the gift appears to us to partake of as little of the white elephant nature as possible. It is worth \$10,000—not in the market merely, but to the dentists for a college. In other words, it would cost them \$10,000 to erect college buildings that would answer their purpose as well as these.

We hope that those gentlemen who oppose Dr. Cogswell in this matter will retire from the position they have taken up. It is an unenviable position, and although they may be thoroughly sincere in their opinions, they would yet do well to recognize that there are those willing and desirous to accept the gift and inaugurate a college if the additional funds required can be raised. If this battle of words continues, and all the

scheme ends in smoke, and Dr. Cogswell withdraws his gift, the dentists of the West Coast will earn for themselves the undeniable reputation of being ingrates. Gentlemen willing to give \$10,000 each for the founding of dental colleges are too scarce in this hemisphere for us to discourage one of them. Certainly, if such munificent bequests are to be met with insinuations and personal attacks, such as have been made on Dr. Cogswell, we stand a good chance of drying up charity at its head. The possibilities of dentistry and its needs in the way of development, all point to the conclusion that such a course is suicidal.

CASE OF SUPPURATIVE DISEASE OF THE ANTRUM OF HIGHMORE, WITH DISLOCATION OF CARTILAGINOUS SEPTUM, OF TWELVE YEARS' STANDING.

BY D. H. GOODWILLIE, M.D., OF NEW YORK CITY.

Read before the Canada Medical Association, at Ottawa, September, 1880.

Dr. D. M., of Ontario, Canada, consulted me in November, 1879, and gave the following history: In 1865 had pain in his second left superior molar tooth and an unsuccessful attempt was made to have it extracted. This probably resulted in rupturing the vessels of the dental pulp, as the doctor says the tooth was started from its socket and then pushed back again. Some time after, from intense pain and swelling of the face, a second attempt was made to extract the tooth. This was not entirely successful, as a root was left in the jaw. From this time the discharge began, and continued until I saw him more than twelve years after.

He presented the following conditions: First and second molars gone from the left superior jaw. Above the alveolus, at the position of second molar, was a fistulous opening made by a trephine some years ago into the antrum; in this opening he wore a hard rubber drain-tube, but as it was small in calibre and too high up in order to drain the discharge from the antrum it was of very little use. It also excited granulations in the cavity. A gelatinous polypus was found in the left nostril, growing from the middle turbinated bone. This hung by a pedicle over an opening made by necrosis of the inferior turbinated bone and the nasal wall of the antrum. From the blowing of the left nostril, by closing the right with the thumb, to free it from the constant discharge, the lower end of the cartilaginous septum was dislocated and turned into the le

nostril, preventing respiration, except when forced. In the pharynx a muco-purulent track was to be seen on the left of the vertebral ridge, caused by the discharge passing down from the posterior nares. This caused a good deal of expectoration. This trouble continuing for so long a time, had somewhat affected his general health.

On the doctor's first visit in November, 1879, I only removed the polypus, as it was necessary for him to return immediately home to meet some professional engagement.

In April, 1880, he returned, and under an anæsthetic I made first an operation on the dislocated nasal septum. An incision being made through the soft parts down to the end of the cartilage, I denuded and pushed back the soft parts, then amputated the protruding cartilage of the septum. The soft parts being brought together and held by small silk sutures, this healed by first intention, and in a week's time it would be difficult to tell where the incision had been made. The next part of the operation was the trephining through the alveolar process at the position of the first molar, directly into the bottom of the antrum, by means of a large bone-cutting drill driven by the surgical engine. This opening gave exit to discharge pent up in the cavity of the antrum. The last part of this operation was the removal, by means of the revolving bone-cutters, of the necrosed turbinated bone and the naso-antrum wall, through the anterior nares. This made an opening from the nose into the antrum extending from the floor of the inferior meatus to the middle turbinated bone and anteroposteriorly about an inch. Through these openings the antrum was freely washed out with thymolized water, and medication applied, which consisted in blowing into the antrum the Iodoform Camphor Co. powder by means of the insufflator. There were present at this operation Drs. Farnham, Carry, Warden and Bucklin, of New York; Marvin, of Brooklyn, and Braden, of Michigan.

I pass round wax models showing the case before and after the operation. The doctor also kindly presents himself for your examination. You will see that the respiration through the occluded nostril is quite free. The opening from the mouth into the antrum is now closing up. A permanent opening will remain in the naso-antrum wall where the necrosis was removed. The purulent discharge has ceased, and he is in robust health.

It is stated that one of the most prominent Greenbackers in the country has, after all, so much faith in gold, that half his teeth are plugged with it.

20TH ANNUAL SESSION

OF THE

AMERICAN DENTAL ASSOCIATION.

HELD AT BOSTON, AUGUST 3D, 4TH, 5TH AND 6TH, 1880.

THIRD DAY—THURSDAY MORNING (*Continued*).

DISCUSSION.

Dr. J. G. W. WERNER said that narcotism did not begin until the patient was asphyxiated. If an anæsthetic was administered sufficiently long to bring about that condition great danger was the result, for the power that controlled the heart was thereby lowered, and rupture of the heart or the different vessels of the brain might ensue.

Dr. W. H. ATKINSON said that every earnest seeker after truth was a coward, in the honorary sense of the word. He himself confessed to being a coward. But when driven into a corner he acted as the timid creature called the fawn did—he fought. He was notified on the previous evening that if he “sat down” on anything said by the gentleman who had just read the valuable paper to which they had listened, and whom he complimented highly, it would not be good for him. But he admired Dr. Barrett very much, and he felt that spots on the sun should not go without having something said about them. The paper just read was far too voluminous to answer off-hand from memory of what was said, for several reasons. Some of the statements were pronounced with indistinctness, and the immense scope of rules for principles contained in the paper was too wide for a conscience that was not specially illuminated to grasp. He objected, however, to coming to conclusions that would not conclude, and simple assertions by a novice that were adverse to the operations and conclusions of men who had spent their lives in the same work, with greater facilities than it was fair to conclude had existed on this occasion, were not worth much. At the same time he felt bound to congratulate the American Dental Association that it had lived to see the day when such a paper could be presented before them and listened to with the attention that this had received. There were, however, several statements in it which he would say generally that he disagreed with—some of them for want of conclusiveness, others for want of verity. Take, for instance, the statement that CO_2 has any action on arterial blood. It was distinctly stated that CO_2 —com-

monly known as carbonic acid gas—caused arterial blood to become venous. The statement was made that it was generally understood that nitrous oxide oxygenated the blood. Without denying or asserting that, he would state a palpable truth—that if the oxygen has already found means of engaging one of its bonds of affinity with nitrogen circulating in the blood territory where there is venous blood, there must be a decomposition of the N O before it can oxygenate the blood. At least it must have the bond holding the nitrogen severed before the oxygen can be free to be even carried by a blood corpuscle. There appeared to him to be some ambiguity in the paper and in the apprehension of the reader of the paper as to what constituted circulation. If they came back to the books then the paper was justified; but he took it that where a man attempted to undertake experiments that had engaged physiologists and naturalists for a long time, he should be careful how he operated and see that he apprehended what was going on, so as to get correct interpretation of the results that seemed to follow his manipulations. Huxley had said that carbonic acid gas was a negative poison. That, of course, was positive nonsense. But so great was the potency of Huxley's name that many had followed him in his errors. He (Dr. Atkinson) had a word to say as to what did really occur in respiration, and to say it not dogmatically, but suggestively. Of all the oxygen that the lungs received they only appropriated four per cent., and thus they exhaled ninety-six per cent. that was once within their grasp. The points of affinity in that oxygen had been so acted upon in the lungs that they were unfit for respiration until they had undergone a process of expurgation, and that debility which they had acquired through passing through the respiratory organs had been removed. Until they went to the bottom of such experiments as they had had described to them, they were simply an accumulation of facts under which the world was groaning, without the ability to interpret them to the satisfaction of any clear mental perception that had a regard for truth. They all loved the truth for themselves. Did they take as great care as they ought that only sound convictions should pass the portals of their lips, which were the divine trysting-places of the intelligences?

Adjourned.

THIRD DAY—EVENING SESSION.

Dr. BARRETT, in replying to those who had criticised his paper, said that he had read his remarks with a great deal of bashfulness, as he knew that the conclusions he had reached were directly contrary to those of

more able men—men before whom he could not stand, and before whom he would uncover his head. But God had given to him certain reason and judgment, and he intended to use them. When he had performed an experiment and it demonstrated to him a certain thing, he was prepared to describe it to those who cared to listen to him. When any member of that Association (and he had stated the same privately to the gentleman he referred to) got up and made what he could not but characterize as an indecent assault on another paper which had been read in the absence of the writer, it was not honest or just. Such unnecessary, uncalled for, and indiscriminating denunciation tended to hurt the feelings of the members.

The PRESIDENT: The gentleman is talking personalities.

Dr. BARRETT said he simply wished to protest against indiscriminating condemnation. Let them seek to prove what was right.

Dr. T. W. BROPHY, Chicago, said the question had arisen, it having been referred to in the paper, whether nitrous oxide oxidizes the blood? The gentleman stated that the opinion that it did was accepted by the greater part of the profession.

Dr. BARRETT: I did not mean of those present, but of the majority of the profession.

Dr. BROPHY questioned the statement of the gentleman, believing that it was a mistake. The question naturally arose as to what actually took place when nitrous oxide was given as an anæsthetic? Did it prevent oxygenation of the blood? He considered that it did. Nitrous oxide gas is a chemical combination of nitrogen and oxygen, in proportion of two of nitrogen to one of oxygen. Therefore they had there a chemical union. Atmospheric air is a mixture of nitrogen and oxygen, and therefore when nitrous oxide is inhaled the points of union are sufficiently strong to prevent the blood from receiving oxygen.

Dr. WERNER asked Dr. Barrett if he believed nitrous oxide oxygenated the blood?

Dr. BARRETT answered emphatically that he did not.

The Section was then passed.

THE PUBLICATION OF THE TRANSACTIONS.

Dr. W. H. ATKINSON moved that the Publication Committee be instructed to confer with different publishers for the purpose of securing the best terms possible in the publishing the Transactions of the Association, by giving them such portions of the matter as they may wish as a part

or as a full compensation, leaving it discretionary with the committee to accept or reject any or all the offers.

After a discussion this resolution was adopted.

PROPOSED INTERNATIONAL DENTAL CONGRESS.

Dr. J. TAFT, Cincinnati, moved that a committee of five be appointed for the purpose of considering the feasibility of holding an International Dental Congress. He thought that if it proved to be feasible an excursion to Europe next year or the year after might be organized with advantage. The time might be very profitably and enjoyably spent if they had the Congress in London or Paris, and perhaps the brethren on the other side of the Atlantic might also gain something by it.

The resolution was carried.

FOURTH DAY—MORNING SESSION.

SECTION III. NOMENCLATURE AND TERMINOLOGY. By DR. W. H. ATKINSON.

In the report of this committee of last year there were two allusions which will form the connecting link with this report. The first was to the nature of Universology as the one all-inclusive science from which all our matured notions of classification and nomenclature must hereafter be derived. The other was to language as a remarkable and guiding instance of a branch of universal things so well understood and so thoroughly distributed (in its grammar, etc.) as to furnish a sort of model for the distribution and classification of all other departments of being. In the report of last year we gave illustration of minute and particular nomenclature (punctits, punctids, etc.) in order to demonstrate the capacities of the new method in that range of things where, as histologists, we shall have the most occasion to employ it. We pass now to the opposite extreme—that of extreme generalization—in order to establish a groundwork of method which shall be demonstrably adequate to embrace and sustain the whole system of possible discriminations of this sort, and so to prove that this is not merely *a* system, but *the* system to which we must resort if we would have anything which shall be thorough and exhaustive. * * * * We must recall the fact that Alwato (Ahl-wah-to) is the name of the new scientific language derived from Universology, of which these new technicalities are merely some of the words.

Three departments of universal things will now be compared with reference to their most general distribution of parts: First, the Cosmos

or world at large ; Second, Language, already alluded to as an epitome of the world, or as a little world distributed on the plan of the big world ; and Third, the Human Body as another little cosmos, or world, also distributed on the same universal principles. * * * The three objects for present comparison are these :

1. Albo (ahl-bo), the Cosmos;
2. Wato (wah-to), Language ; and
3. Hobodo, the Human Body.

First let us deal with Wato (Language). This undergoes the well-known discrimination into (1) Parts (of speech), the basis of grammar; and (2) Elements (of sound), vowels and consonants, the basis of phonetics or phonology. * * There are usually reckoned (say) nine parts of speech. These can be, however, and are for universological purposes reduced to three: (1) Substantivoids, (2) Adjectivoids, (3) Connectives or Relationoids. * * *

Passing to Albo, the Cosmos (and this is alike true of Alio or the universe), there are three parts of being (in this same large sense of the word "parts") which accord with the three grand parts of speech in this way : ¹Albo, ²Wato.

Three parts of being. Three parts of speech (grand) :

1. Aggregates, or things.—1. Substantivoids.
2. Properties.—2. Adjectivoids.
3. Relations.—3. Connectives, or Relationoids.

* * * The basis of the fundamental discrimination in medical science is : (1) Physiology, (2) Anatomy, (3) Hygiene. We see the same discrimination extended by implication and analogically to language and to all other domains of being.

The Section was then passed.

SECTION II. DENTAL EDUCATION.—FIRST PAPER, BY DR. J. N. CROUSE.

* * * Nearly all the members of this Section who have taken any part in it have emphasized the fact that a better preliminary education should be instituted on the part of the students before commencing the study of dentistry. It is also urged that some standard as to the amount of preliminary education required by the dental colleges should be fixed by the Association, in order to ensure progress in that direction, and also to secure unanimity on the part of the colleges. It is also urged that in addition to the mental discipline acquired by pursuing such a course of study as was usually embraced in the curriculum of our best academies, the student should have some office training and a preparatory course of

reading previous to attending lectures. The first point urged is that the colleges should insist upon a more rigid preliminary examination as to the student's character and mental acquirements. More care in the examination and graduation of students is needed also. * * * The Section recommends the adoption by the Association of this resolution : " *Resolved*, That in order to secure representation in this Association dental colleges must, subsequent to October, 1881, require all students entering therein to take two full courses of lectures previous to coming forward for examination and graduation." So far, the colleges coming within their scope have not all complied with the resolutions passed by this Association last year. As far as we have been able to ascertain, the following schools have substantially adopted them : The dental department of Vanderbilt University, Boston Dental College, Western Dental College, Harvard School and the dental department of Michigan University. The Section feel sure that the respectable schools that have not already complied with the resolutions will shortly do so.

SECOND PAPER, BY DR. T. W. BROPHY, CHICAGO.

The time has not come, nor will it ever come, when the medical profession will recognize individuals or a body of men as medical specialists, no matter how eminent and scientific they may be, unless they are graduates in medicine—in short, medical men. Indeed, it would be as unreasonable for dermatologists, ophthalmologists, gynæcologists and others to teach their departments as independent professions and expect to be called medical specialists, as it is to call a dental graduate, much less a man who has not received a dental college education, a specialist in medical science. A medical specialist must be medically educated, after which he may pursue any department of medicine that his inclinations or tastes may determine upon. * * * There is but one way by which dentists can become medical specialists, and that is by acquiring the broad foundation of a medical education, on which every medical specialty must be based, the specialty of dental surgery included. Therefore the members of this Association require their students to attend the prescribed course of lectures in the medical colleges, and graduate as doctors of medicine before entering upon the specialty of dental surgery. Unless this Association adopts this report, or such portion as requires all members to demand that their students graduate in medicine, or adopt some measure by which this clause may be carried out, I believe that it will be to our credit as a society to expunge from the code of ethics the clause, " *Dental science is a specialty in medical science.*"

THIRD PAPER, BY DR. L. C. INGERSOLL, KEOKUK, IOWA.

The growth of the sentiment regarding a higher dental education can be traced to two sources—one, social science, and the other moral science. Out of social science springs the desire that the profession should rank higher in the social scale, and that it should stand higher in public estimation as compared with other professions than it does. Out of moral science springs the philanthropic desire that the profession should be able to do better service to mankind in the prevention and relief of suffering, and in promoting health and long life. * * * To begin education in the dental college and end education in the dental office can never give to the profession the educational rank of the learned professions. General education will—special education will not. When we look forward to, and hope for, the elevation of the dental profession, we must seek recruits among the better educated class. As regards the science of dentistry, its basal principles are as intricate as the nature of man and as hidden as the forces of nature. If we would raise the dental profession in social rank and secure best its philanthropic aims, we can only do it by a deep and broad culture, such as educated men who have already acquired rank and position will recognize and respect. A skillful hand without a cultured brain can never make dentistry what it ought to be. The habit of thought and investigation is far more important to the student of dentistry than any acquired skill of hand. * * *

Is dentistry a specialty of medicine? I answer "Yes" and I answer "No," for the question will admit of both an affirmative and a negative answer. If by medicine is meant that broad science which teaches the nature, functions and whatever else is known and knowable of man's entire physical organism, I will accept the affirmative answer. Dentistry is a specialty of that broad and comprehensive science which brings within its scope the whole human physical nature, for dentistry pertains to a part of man's physical nature. It has for its purpose an investigation of part of the human structure, the unfolding of the laws that control the development of the structure, of the lesions to which it is subject. When the science of medicine is spoken of in its fullest and most expanded sense, it may be made to include dentistry and all other specialties that make any part of the physical man a subject for scientific research. But there is no such use of the word in common parlance. The term "medicine," as applied to the department of science, unless otherwise specifically defined, must be understood in its popular sense, and is generally so understood. If dentistry has been forever ignored by the

schools of medicine; if its patronage cannot be traced to college faculties and the medical profession; if dentistry is to become an established science from sources outside the medical faculty and the medical schools; if, after centuries of medical teaching in well-endowed schools, dentistry has been compelled in the nineteenth century to establish itself, basing its profession on scientific facts never known to the medical profession, and has collated these facts into a science, and proved it by a systematic practical demonstration on the living subject, we should be ashamed to seek patronage where it is not to be found just for the sake of honorable mention. It is a sign of feebleness to ask for the mantle of a time-honored ancestry to fall on us. Much better is it for the dental profession to claim that it came, Adam-like, out of the virgin soil.

(*To be Continued.*)

MEETING OF THE FIRST DISTRICT DENTAL SOCIETY,
HELD AT THE RESIDENCE OF DR. W. T. LA ROCHE, 67 WEST FIFTY-
FOURTH STREET, NEW YORK, NOVEMBER 2D, 1880.

The meeting was called to order by the President, Dr. Clowes, at eight o'clock.

THE CLINIC.

Dr. C. F. W. BÖDECKER reported as follows: The attendance at the clinic during the afternoon was between sixty and seventy. There was only one filling operation to report, and that was by Dr. G. S. Meigs, of a right upper central, the mesial portion of which was about half gone; the pulp had been destroyed or had died, and the pulp cavity been filled previously with oxy-phosphate. The tooth was prepared before coming to the clinic. Dr. Meigs started with No. 6 Globe Gold, using the electric mallet. When he had got a pretty fair start he used No. 30 rolled gold. The operation was completed in about two hours and was done very nicely.

Dr. CAMPBELL exhibited his celluloid apparatus and steamed a piece of celluloid on a metal die, bringing the heat up to 330 F. The plate looked beautiful and almost like finished.

Dr. BREWSTER presented a gentleman about twenty-eight years of age who had been the victim of the most bungling treatment. About eight weeks ago he suffered from pulpitis of the right upper canine. He went to a dentist who made an application of creosote and let him go. Two

weeks later he went to the same man, who put some more creosote in. Two weeks after that, when out of town, he went to another dentist, who said that he had something better than creosote. He took a hand-drill and attempted to expose the pulp chamber, with the intention of putting some arsenic in. He did not reach the pulp chamber, however, but went above it, straight through the crown of the tooth into the neck of the lateral, where he stopped. He then took some arsenic and stuffed it into the hole, and filled it up with gutta-percha. Two days afterward the patient had a large swelling on the face and a considerable amount of pain. He then went to Dr. Brewster, under whose treatment he has nearly recovered.

Dr. MILLS presented a case of necrosis which originated from the root of the right upper molar. It broke through on the outside of the cheek and Dr. Mills dressed it.

Dr. BÖDECKER said that he intended for the December clinic to get up a mallet match for the purpose of trying the different kinds of mallets. Dr. Webb had promised to prepare some glass tubes, which will be filled with gold with the different mallets. Five operators had promised to take part in the match, who will use the electric, the steel, the lead, the tin mallets, and hand pressure. He should like to get some one to use the pneumatic and the automatic mallets also.

INCIDENTS OF OFFICE PRACTICE.

Dr. JARVIS said he had at present a case which illustrated the fact that there might be a very great difference in the density of the structure of the teeth on the respective sides of the mouth. The case he referred to was that of a young lady about twenty-three years of age, of good build and form, in excellent health and with a perfect set of teeth, with the exception of some decay in the ordinary depressions of the crowns. The teeth were all remarkably clean and the gums healthy. While excavating in the crowns of the molars on the right side of the upper teeth, the structure was found to be so hard and fine that he was afraid his patient should wonder why he was cutting away such good material. But when he began to excavate the teeth on the other side of the mouth it was almost like cutting cheese. The contrast between the resistance of the teeth on the one side and that of those on the other was very striking. Why was there this great difference in the teeth? The superior second bicuspid on the left side was largely decayed on the distal proximal surface. The inferior molar on the same side was also largely decayed on the distal proximate surface. He asked the patient if these teeth had ever been

so troublesome as to prevent the exercise of that side of the mouth, and she answered in the affirmative, saying that they had troubled her for one or two years. He (Dr. Jarvis) thought that this fact should be considered in connection with the difference in the density of the teeth to which he had referred.

Dr. Jarvis went on to say that he had been exceedingly perplexed a number of times with the breaking off of fine points in nerve canals, and recently he had one broken off in the canal of the inferior bicuspid. It was beyond his ingenuity to remove it with any appliance he could devise. He made a magnet with a small instrument, used cotton, floss silk, and gutta percha, but all to no purpose. He postponed the case, not telling the patient what was the matter, and on the following night he was awakened out of a sound sleep with the impression that he was using taffy to extract the point. The next day he met the lady by appointment, and after drying out the cavity he worked a little soft taffy down on the end of a piece of floss silk, got a nice hold of the broken piece of steel and brought it away.

Dr. Wm. H. ALLEN said that in preserving pulps by covering them with oxy-phosphate he often wondered if such pulps lived and had often thought that they did not live. He had a case a short time ago of an upper canine on the left side which was badly decayed and the pulp exposed. It was very sensitive, and after cutting away the decayed portion he filled it very carefully with oxy-phosphate, without trouble to the patient, and put in a gold plug. After a few days the patient had a little feeling in the tooth, and came to see him (Dr. Allen), but he was out. The patient went to another dentist who was a member of that Society. He told the dentist how he had been treated, and the dentist replied, on examining the tooth, that the nerve was dead and that it had died within a few hours. He then drilled the tooth on the lingual side, took out the dead pulp and put in a gutta-percha plug. A few days after the patient again visited him (the speaker), when he took out the plug and there came away a good deal of blood.

Dr. W. H. ATKINSON remarked that they were getting into deep water. They were too apt to jump at conclusions, and let a few observations stand as the criterion of their judgment and make that judgment sweeping. He had known pulps to die—especially in cuspid teeth—in every form of filling he had ever used. He could not say why they died. Sometimes the application of oxychloride of zinc had the effect of causing great and continuous pain for hours, and in every case where this was the result the pulp remained alive. Sometimes when there had been no pain

the pulp had been converted into a protoplasmic filling, than which he (Dr. Atkinson) knew no better filling.

He was very happy that they had come to realize the value of the clinic and reports of cases of office practice. However much it might anger them to open their mouths and let the darkness out, he yet had so much confidence in their fraternity of feeling that he would not mind being sent to perdition by every member if he did make a mistake. He would rather make a mistake sometimes and let others have a black spot to shie at, than be still, and thus contribute to the dying out of interest in their meetings.

Dr. J. A. BISHOP said that four weeks ago a gentleman thirty years of age came to him with a swelling on the right side of the face. It had an opening which discharged. On examining the mouth he found that the first molar was gone, the second molar was healthy and there was no appearance of the wisdom-tooth. He probed the opening in the cheek, passing the probe back an inch and a quarter, and struck something which was a little tender. On that afternoon (November 2d) the patient was etherized and the growth (exhibited) was removed. It seemed to be nothing more than an inflammatory tumor. The wisdom-tooth (which was not erupted) was also removed, with great difficulty, the operation lasting two and a half hours.

Dr. G. W. WELD said he had a similar case a week ago. A gentleman had a molar filled with amalgam ten or fifteen years ago. A tumor, not of a malignant character, had formed, which it was proposed to remove shortly.

Dr. W. D. TENISON asked what should be done in cases where it was time for the bicuspids to be erupted and where the deciduous teeth were still firmly set in the jaws? He had three such cases.

Dr. ATKINSON thought that it would often be a great advantage if dentists and medical men would get rid of the idea that they must do something. When they did not know what to do, they should do nothing but wait. If waiting did not suit the patients, let them go to some one in whom they had more confidence. The dentist should possess a sympathetic interest in his patient, and at the same time be independent and less anxious to give opinions.

The President considered that the subject they were discussing was a most interesting one and also instructive. People often came to him with teeth that were obstructing those that would grow if they had the chance. A way by which they could ascertain to a certainty if they might pull out teeth which they thought might be obstructive was to

bore for those that should be behind them. It was wrong to send their patients away or to wait. They should take a drill and bore, and as soon as they struck enamel they would know a tooth was there. If they could not strike enamel they might be pretty sure there was no tooth to come up. In regard to the matter of wisdom-teeth erupting, they would have no difficulty if they only took away the six-year molar.

Dr. BÖDECKER said that two years ago a lady about twenty-four years of age came to him to have some cavities filled. He found on the right lower side of the mouth one of the temporary molars which was very much decayed. This the patient said she wanted filled. As there was some irregularity he thought he had better take it out. He did so, and was surprised to find the roots so long. He probed for the coming tooth which he expected to find, but could find none. Up to a month ago it had not erupted. About a month ago she came with her sister, who is seventeen years of age, both of whose temporary molars were loose. They were extracted and a week ago the permanent teeth were very nearly erupted.

Dr. BISHOP said his experience led him to believe that the germs of the permanent teeth were always there, but why they did not show themselves he could not say. He had a patient seventy years of age who had a wisdom-tooth just coming through.

USE AND ABUSE OF ANÆSTHETICS IN "DENTAL SURGERY."

Dr. W. H. ATKINSON then read the following paper:

The first requisite is, to have some one point out a case in "dental surgery" in which any agent known as an anæsthetic—beyond the merely local obtunding of the part—is at all admissible. When that is satisfactorily done, it will be time enough to set the limits to "*use*"—any whit beyond which will indicate the "*abuse*" of such agent in the measure of the degree of excess.

To all who are cognizant of their own mental processes—or, in other words, who are in the possession of a measure (canon of criticism) by which they can judge of the soundness or unsoundness of the cogitations out of which their purposes arise, by which they "determine," as they say, to do or not to do any act—there is little need of further pursuing this inquiry.

But for the sake of those (and they are many) who are swept along in the wild maelstrom of the mercantile spirit of the age—those whose main consideration is, "will it pay" in the quick and easy acquisition of money, irrespective of the cleanliness and soundness of the currency thus attained—whole volumes of closely thought out and clearly stated

lectures and demonstrations of principles, laws and practices are needful, from the ablest and profoundest among us, to enable the many to be made aware that all we do, in all directions, is under the inevitable law of agreement of principle and detail, the infractions of which must result in mischief. The greatest mischief comes of the assumption by the many among dentists and patients to be in possession of the knowledge to make them competent judges of what is correct and beneficent advice and practice. Many are in the practice of dentistry who are utterly unfit to diagnose or to treat even very simple cases, as viewed from the position of a really qualified dentist.

The many who call themselves qualified to practice, and would be offended if not recognized as first-class, and, as they say of themselves, "as good as any living," are without the semblance of authorization to practice, even by holding, as some do, purchased or gratuitous degrees, to which they point as testimony of their fitness to belong to societies made up of "titled men only." So superficial has been and is the knowledge of anatomy, physiology, pathology and therapeutics, that it is rare to meet a person who can justify the claim to know, when the functions are aberrant, what is the corrective and how to administer it, even among the men who have spent their whole lives in the attempt to comprehend the laws and principles involved in every case of proposed anæsthesia. To the honor of dentists let it be said, when they do blunder they are more ready to correct the error than those who claim knowledge of occult process, the disturbances of which are manifested in complicated symptoms and ambiguous presentments of disordered functional activity, simply because they hold an M. D.

Anæsthetics are those agents which deprive the nerves of the power to report disturbances of functions to the seat of perception. Therefore, in the degree of its manifestation, anæsthesia is death of the functional activity so long as the nutrient and sentient currents are held in abeyance. Persons in pain become so deranged in cerebration that they are unqualified to direct what course should be pursued with them under severe suffering. So well known has this fact become, that physicians rarely attempt to prescribe for themselves when sick.

If this be commendable conduct in them, what should be said of the dictation of ignorant, nervous and nearly insane friends of the sufferer, in cases involving the retention or loss of valuable portions of the human body? Certainly not that ignoramuses—surgeons or dentists who have the reckless hardihood to mutilate the body under anæsthetics—should be consulted because it is fashionable.

Probably the greatest excuse to use anæsthetics in surgery arises from a general misapprehension of the degree of pain consequent upon making operations. Any one sufficiently conversant with minute anatomy and the process of deterioration known as inflammation, will be aware of the insignificance of the pain attendant on operations in uninflamed tissues ; also, the unbearable agony that attends rough handling or cutting of these tissues when their sensibility is exalted by this process. At least nine-tenths of the suffering in operating in surgery is the result of fear, and want of knowledge of what to expect as to pain and the result. This uncertainty and apprehension leads to delay, until the threatened danger overcomes the further postponement of an operation which is now many more times painful, dangerous and difficult than it would have been if better knowledge had decided on an earlier operation.

Early extirpation of morbid growths minimizes pain, danger, and cost to a degree not admitted or considered admissible by those who take counsel from false precedent practices, resultant upon lack of a knowledge of the facts as here stated.

Such surgery as properly comes within the province of the oral surgeon can invariably be better done without than with general anæsthesia. Local obtunding of sensation is more conducive to good work, because the intelligent coincidence of the patient may be secured at every turn in the operation, whether the variation of means or method be anticipated or incidentally presented in the course of surgical procedure. The idea that the patient does not sensibly suffer under anæsthesia is chargeable with much of reckless blundering in operating. Mental hallucinations often arise at or near the point of the patient's becoming oblivious to pain, which are difficult to manage, and which take a long time to get rid of on the part of those subjected to them.

Some of these dreadfully painful mental states have arisen before my own eyes. The patient in one instance (a girl in her early teens) insisted upon it that the operator had kissed her, and she told him so in indignant terms, while her father, mother, and I stood by, to whom she appealed, asking us why we had permitted it in our very presence. I doubt if the poor creature ever learned to attribute her mental state to the proper exciting circumstance, which was ether, given for the extraction of a tooth. To show that it was only a partial aberration of her consciousness, I will state that the moment consciousness returned her first words were, "Now will you give me them spoons?" This sentence induced her mother to inform us that she had promised her a set of silver spoons if she would have her tooth extracted.

The molecular metamorphosis is so changed, that it is doubtful if it ever fully recovers normal activity after full anaesthesia. I think it will not be doubted that men who administer anaesthetics should be aware of all that is knowable as to their mode and degree of action on nerve centres, and that those who are not in possession, in some good degree, of this knowledge, should be prohibited by law from using them.

The sentient nervous system is comparable to a finely constructed fort or defence against outward foes. Anaesthetics act like insidious enemies, by attacking first the outer lines and posts of single sentinels, destroying them in serial order as they go, so as to prevent them from giving warning to the inner citadel, where the head of all the forces is shut in, thus at the last causing the army to succumb and witness the complete demolition of the beautiful structure, in the one instance of the Army, and in the other of the Brain, the proper seat of *conscious* autonomy as well as the *unconscious* currents of bodily functions.

The meeting then adjourned.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

BY DR. C. M. WRIGHT, BASEL, SWITZERLAND.

Eight years ago five American dentists, who were then practicing in Switzerland, met by appointment at Lucerne, and on the 4th of July ascended the Rigi, and, as had been their intention, there laid the foundation of a dental society. They were some six thousand feet above the level of the sea ; the air was rather rare and the champagne was a fair quality of the hotel article. The christening took place, and a committee was appointed to issue invitations to brothers, not too far away, who might perhaps feel, as this little company did, that a dental society in Europe would be a good thing. On the 30th of August, 1880, this Society again met in Lucerne, intending, if the weather should prove favorable, to make the ascent of the Rigi, and *confirm*, as it were, this child of eight summers. They met at the Schweizerhof, and held the meeting while impatiently watching and waiting for the Rigi to show her smiling face from behind the clouds ; but she refused to do so until the third day, when many of the members made the ascent by the cogged railway from Viznau.

The Society now numbers forty-five active members, and Germany, Italy, France, England and Switzerland are represented by Americans

who are practicing their profession in these countries. The meetings have been held in past years in Paris twice, in Baden-Baden, in Hamburg, in Genevè and Basel. It has been decided to hold the next meeting at Wiesbaden, another of the fashionable watering-places of Germany.

It will be impossible for me to give a full report of the discussions of this last meeting, but if I can emulate the straw when it shows how the wind blows, by giving a slight indication of the sentiments of the Society on a few of the subjects of discussion, it may be of interest to some of the readers of *JOHNSTONS' MISCELLANY*.

The first subject was: "Is it correct practice to anticipate caries of the teeth by operations for permanent separation?"

Dr. DABOLL, of Paris, presumed that the "operations" referred to Arthur's method, as that is the best known system of separation. He has seen considerable injury to the teeth following operations on the Arthur plan from Arthur himself, and does not regard it good, as a rule of practice, to anticipate caries, except in certain cases. He does not object to cutting away the approximal faces of the sixth year molar, where the temporary molars are liable to caries, or where the surfaces of the sixth year molar have been slightly abraded from the contact of a carious temporary molar. We are also justified, he said, in following the Arthur system of separation when the surface of the enamel shows any evidence of disintegration; but where the dentine has been reached, or the enamel penetrated by caries, he thinks that it would then be inadvisable to cut away, hoping to arrest further progress of the disease. In other words, the Arthur plan is good and it is not good. It is good when controlled by a very cautious individual judgment. He would not expect or attempt to bring up a family of children who had inherited delicate teeth without approximal fillings.

Dr. JENKINS stated that there is a class of teeth belonging to a race of men that will bear this separating for the prevention and even arrestation of caries. The Sclavic race have such a quality of teeth that many dentists who are practicing in Russia seem to employ no method for the arrestation of caries other than this of separation, and they are successful with this class of teeth. The same treatment would simply ruin the teeth of the German or others who have soft or not well mineralized teeth. We must be governed in our practice by the quality of the tissues upon which we operate.

Dr. ELLIOTT, of London, thought that the Society had expressed itself with sufficient clearness on this subject. We are not extremists. If we find a perfect set of teeth, it would seem almost like insanity for us to

cut away and make spaces between them for the purpose of preventing that which may never happen, and yet we all meet cases where a little separation may be of benefit to a particular tooth or to an entire denture.

In the discussion of the second subject, "Treatment of deciduous teeth and the best materials for filling the same," the same speaker, Dr. Elliott, referred to the disadvantage of employing the perishable materials in children's or anybody's teeth ; not that the materials will not perfectly preserve the teeth, but that the patients get tired of constantly returning to have the same teeth refilled, and on this account he should prefer the more permanent and less perishable materials for children's teeth. He referred to a reason given by Dr. Flagg for not using gutta-percha on approximal surfaces—that from the nature of the surface of gutta-percha, the mucus and food is so liable to collect upon it, is held by it indeed, leaving unclean surfaces.

Dr. CRANE, of Paris, said that in his treatment of very sensitive teeth for little children of three or four years of age, where it is impossible and unadvisable to excavate sufficiently to retain a filling, he has in some cases filled the spaces between the teeth with gutta-percha, bridging over the spaces. For many reasons, any way that we can give temporary relief or nurse the caries until proper operations can be made, is an advisable mode of practice. In exposed pulps in children's teeth he devitalizes the pulps with arsenic, as in permanent teeth, and fills the roots with oxy-chloride of zinc, and the crowns with gutta-percha, etc., giving them the same care that he would in similar cases in adult teeth. The necessity for avoiding inflammation and abscess is, perhaps, greater for children's mouths than for adults'.

Dr. BLOUNT objects to filling the roots of deciduous teeth, as it prevents absorption of these roots, or interferes with the process of absorption.

Some discussion ensued on the question of absorption of roots after the pulps had been devitalized, but Dr. Blount thought that there could be no question that where the periosteum exists in a state of health, and where the roots are not dead through and through, as we too frequently see them, absorption does take place in roots where the pulps have been devitalized and removed, and therefore he objects to filling them.

Drs. JENKINS and DABOLL agreed in the necessity of gaining the confidence of little children by easy operations. Dr. Jenkins has employed tin and gold in cavities in the teeth of children where he thought it safe to employ sufficient pressure to consolidate it enough : or gold, gutta-percha, amalgam, or anything that he could.

Dr. DABOLL has for three or four years employed tin foil instead of amalgam in crown cavities for children, and Weston's cement, and prefers it to oxychloride on account of its causing less irritation. He nearly confines himself, however, to gutta-percha and tin foil in the filling of children's teeth.

The third subject, "The Chemical *versus* the Electrical Theory of Caries," was treated in an able manner by Dr. W. D. Miller, of Berlin, in an essay or lecture delivered before the Society and illustrated by diagrams, etc., on the blackboard. The paper will be read before a scientific society of Berlin, and it is to be earnestly hoped that we may have it in some of our American dental journals in a few months. It will be impossible to report the remarks of Dr. Miller, as an abridgement of his remarks would necessarily do him injustice. The whole tenor of the lecture, however, showed that the experiments which Dr. Miller has conducted with ivory cubes connected by metal rods, or containing metal fillings, etc., and placed in solutions that would excite electrical changes, have been with quite contrary results from the experiments reported by Dr. Chase, of St. Louis, a few months since. Also that a disk of dentine from the human tooth is an absolute isolator of electricity, and will stop the current of a strong battery most effectually if placed between the ends of a connecting wire from the battery. The conclusion he arrived at was that fillings of métal can have no electrical relations with dentine, and that the new doctrines of Palmer, Chase and others, in regard to the chemico-electrical causes of secondary caries of the teeth, have not in any way been substantiated by the experiments of Dr. Miller, who has certainly proved to the "American Dental Society of Europe" his ability to make the experiments and draw scientific deductions from them.

Dr. PALMER congratulated his friends in Europe on having found the "facts" of true practice, but he said that unfortunately they had not the "science" of the thing. Dr. Palmer's theory could explain why tin and gold combined in a filling would save teeth that gold alone, or tin alone, would not.

The theory was, and is, a very plausible one. It has waked up the dental world here. Dr. Palmer was no doubt right in his inference that the American Dental Society of Europe did not contain science enough to dispute his assertions, nor to question his theory. Personally, I hope I have said enough, even if I may have misrepresented Dr. Miller, to provoke a speedy publication of the paper read by him at Lucerne.

In referring to "Tin and gold *versus* gold alone in so-called soft and chalky teeth," Dr. Jenkins stated that he had the authority of Dr. Abbot and others in North Germany who have been using the metals in this way, for saying that the only reason he and they have for accounting for its success, is that it is more easily adapted to the walls of cavities than gold alone—even than Abby's soft gold—and that, as was insisted upon by Dr. Abbot, in Geneva, the materials become, as it were, amalgamated (using the term without reference to mercury)—that there is a molecular change; that the filling becomes harder than when first introduced; that the same result follows whether the gold is rolled outside of the tin or *vice versa*; that less force is required to pack this filling to the walls of cavities; that while the filling itself forms an oxidation of the tin and this change in the molecules of the materials becomes dark and sometimes black, the tooth is not discolored.

Dr. JENKINS said that he has used it at the cervical walls of approximal cavities, building up the rest of the filling with gold, with great success. He does not believe that it is on account of any electrical affinity for tooth tissues that this combination of metals is made what it is—"practically a good thing to fill soft and chalky teeth." He claims that every one who has tried it has been astonished at the results, and yet every one has used it after his own peculiar method, in strips, cylinders, ropes or balls, with the gold outside in this case and the tin in the other, with equally good results.

In discussing "Incidents of Practice," on the subject of replanting teeth, Dr. Elliott described in full the method of Thompson, of London, who caps the ends of the roots with gold and leaves a gold tube fixed in each root that can be closed with a rod of gold or a pledget of cotton, and easily opened in case of any periosteal trouble; the object of the gold caps on the end of the root being to prevent, if possible, the absorption of the root so liable to occur after replanting. Thompson, however, with all these precautions, lays great stress on the necessity of having a perfectly healthy alveolar periosteum, when replanting is advised, to ensure success. Magitot claims some eighty-five per cent. of successes by only replanting, without even removing the pulp from the extracted tooth.

The question was raised by a member, whether the roots were not as liable to absorption above the caps of gold, or between the cap and crown, after the Thompson method had been applied? Generally the members did not seem to regard the operation as a necessary one.

Dr. DABOLL has extracted inferior incisors, and after simply removing

the granulation or accumulations about the root, has replanted, and believes that in many cases this operation is superior to the method once in vogue of cutting through the alveolus and treating.

Dr. ELLIOTT then gave an interesting account of a dental tournament held in London by five operators to determine the question of the best way to make the best filling in the shortest time. To explain this, he showed five models of molar teeth, each as near like the others as possible, and each having a cavity in one of the molars, and each cavity as nearly like the others as possible. These were given to the operators who had entered the lists, and before a judge or judges each filled a cavity in his own way, using what pressure or force he saw fit to condense the gold. Two, if I report correctly, employed the electric mallet; one malleted for himself, having an assistant to supply the gold to the cavity, and one employed the engine mallet and hand mallet, and one the hand mallet alone. After this had been accomplished and the time of each accurately marked, the models containing the fillings were sent to another dentist, who tested the specific gravity of the fillings, the weight, the stability, or rather ease with which the fillings could be dislodged, etc., etc. The results were given in a tabulated diagram on the blackboard by Dr. Elliott, but require explanation that I cannot give without the table. The difference in time, however, was that in two cases it required five hours and some minutes to condense the gold, and in these cases the electric mallet had been employed, and in one case it required two and a half hours to insert the gold with a hand mallet. The difference in the specific gravity of the fillings was not great. I hope Dr. Elliott will give full accounts of this tournament to his friends in America.

Dr. ELLIOTT also presented some fifteen or twenty large drawings of the different methods of pivoting teeth. The drawings, with the names of the inventor or one who describes the method, and the date of the description, would, if presented to the dental world, form a good history of this operation, and in the hands of operators or students would prove a valuable guide in its performance. The inventor would be spared the annoyance of discovering what had been well described before in the floating copies of some dental journal, and still he could at a glance, by a combination of methods, perhaps, or by suggestions to his mind by what others have done, invent for each case his own method. This work of Dr. Elliott's, while disposed of by the Society at a glance, must have cost much labor and research, and the illustrations were so complete that at one glance the different systems or methods of pivoting crowns to natural roots were perfectly photographed

on the minds of those present. The figures of the teeth drawn by Dr. Elliott were perhaps fifteen inches in length and were intended for public instruction; but smaller copies, if published in the MISCELLANY, and occupying four or five pages, perhaps, would, after the manner of object lessons to children, give to the dental world a complete history of the operation of pivoting in a much more satisfactory and comprehensive manner than the mere descriptions could.

So much valuable knowledge and so many useful hints were floating about in our little parlor at the Schweitzerhof, that every member present felt that he had been attending a glorious banquet, and I felt that if I could give to the readers of the MISCELLANY only a few of the *bon-bons* from the banquet, I should at least be displaying an unselfish spirit.

TRANSACTIONS
OF THE
ODONTOLOGICAL SOCIETY
OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, MAY 3D, 1880.

[Continued from page 448.]

DISCUSSION.

Mr. COLEMAN said that during his presidentship Mr. Callender had promised to read a paper on this subject (Nerve-stretching) before the Society, but unfortunately died before he redeemed his promise. He could recollect many cases in his own practice in which he had little doubt that this operation would have done good. One lady, in particular, he remembered, who suffered most severely from neuralgia. All sorts of remedies were tried in vain: iodine of potassium seemed to do some good for a time, but nothing else produced the smallest effect on the disease. All her teeth were removed one after another, and after each operation she enjoyed from six weeks' to two or three months' immunity from pain. He did not know whether this was due to the effect of the shock of the operation on the nerve, or whether it might be owing to the stretching of the small branches to the fangs which took place at the moment of extraction. He should have been glad if Mr. Underwood had given a

fuller account of the operation itself, especially as to the precautions to be observed in dealing with small branches, such as those of the facial as they appeared at the different foramina.

Mr. CHARLES TOMES said he had had a case under observation, the full history of which he hoped to relate to the Society at some future time. The patient had suffered from exceedingly severe neuralgia, affecting the course of the inferior dental nerve, for four years past. All his teeth had been extracted, all sorts of drugs had been tried, together with galvanism, etc., but without any benefit. Mr. Tomes then exposed the nerve at the mental foramen and stretched it, but this had no effect. Accordingly, a few days after he reopened the wound and removed a quarter of an inch of the nerve, taking particular notice that the cut ends did not touch each other. After this the patient had extra cessation of pain for a month, when it gradually returned, and on cutting down upon the nerve again, three months after the first operation, he found that it had firmly reunited. Another time he would perform the operation which had been proposed and carried out in a good many cases by Dr. Hodgen, of St. Louis, viz., to expose the nerve *in* the dental canal and to withdraw a good length of it. Nerve-stretching did good in many cases, but when the inferior dental nerve was affected it did not offer much prospect of success. The nerve made a sharp turn upward and outward at the mental foramen, and was, moreover, pretty firmly attached to the bone by fibrous tissue; it was, therefore, almost impossible to stretch it effectually. The loss of this nerve was of so little account, that he should certainly prefer the greater certainty of Dr. Hodgen's operation. He had met with two patients who had lost the inferior dental nerve from syphilitic disease, and they did not appear to suffer any inconvenience whatever.

Mr. SEWILL said he could not agree with Mr. Tomes when he said that the loss of the inferior dental nerve caused no inconvenience to the patient. He had been consulted by an elderly gentleman who was suffering from local neuralgia, owing to a fibrous growth which pressed upon this nerve, and he complained of very great inconvenience; he was constantly biting his lip, and owing to the absence of sensation was not aware that he had done so until swelling of the lip resulted and seriously interfered with mastication. Mr. Sewill had also heard of cases in which nerve-stretching had done no good; for instance, he remembered a case in which Mr. Lister had stretched every nerve of the brachial plexus with a negative result, but he had never heard of a case in which the operation had done harm; he thought, therefore, that it

was always worth a trial in any really obstinate case of neuralgia.

Mr. WHITE, of Norwich, said he also had known patients to complain seriously of the inconvenience resulting from loss of sensation in the parts supplied by the inferior dental nerve. Some twenty years ago he removed a lower wisdom-tooth, and the operation was immediately followed by loss of sensation of the lip on the same side. This continued for six months; at the end of which time sensation returned, but soon became exaggerated, and this condition of hyperæsthesia still persisted.

Mr. S. J. HUTCHINSON said that according to his experience the chief seat of the pain in cases of facial neuralgia was much more often referred to a spot near the angle of the jaw or about the eye, than to the region supplied by the terminal branches of the inferior dental nerve. In the case of the pain being seated near the angle of the jaw, what part of the nerve should be stretched?

Mr. CHAS. TOMES said his remarks appeared to have been somewhat misunderstood. He had not intended to advocate division of nerve trunks as an infallible cure, he knew that the result of this operation was notoriously uncertain, but he thought that in some cases, as in neuralgia affecting the inferior dental nerve, it offered a better chance of success than the stretching; it was the best thing to do, because nothing better could be suggested.

Dr. H. C. BLANVELT, of New York, said he had assisted at several operations of this kind in America. He could only then call to mind the particulars of four cases. These were, a case of stretching of the sciatic nerve for obstinate sciatica, with a good result; one of stretching of the inferior dental at the mental foramen for severe facial neuralgia, with good result; a stretching of the ulnar nerve, also successful; and another case of stretching of the sciatic, which was not successful. Four months afterward the nerve was cut down upon again and well stretched a second time, but again without any good effect. This, then, was the only unsuccessful case out of the four.

The PRESIDENT having called upon the author of the paper for his reply,

Mr. A. S. UNDERWOOD said that Mr. Coleman's explanation of the good effect that often followed extraction of teeth in these cases was certainly ingenious, and might be the correct one; but this improvement was seldom more than temporary, and patients had generally lost all their teeth before they could be induced to submit to any cutting operation. With regard to Mr. Tomes' want of success, it was just possible that he had not used sufficient force. Mr. Simmington, in a paper on "Nerve-stretch-

ing" read before the Chirurgical Society of Edinburgh, related some experiments which he had made with the view of ascertaining what amount of force might be applied to nerves without fear of breakage. He found that the sciatic nerve of a strong man would bear a weight of one hundred and eighty-six pounds, and that of a delicate girl eighty pounds, without giving way. Mr. Holden had indeed related a case in which the brachial nerve had been torn across in an attempt to reduce a dislocation of the arm of long standing, but in that instance very great force was used. It was impossible to rupture a nerve by any ordinary amount of force, and it was important that a sufficient amount should be used to make a successful result as sure as possible. It was well, also, not to pull the nerve in one direction only, but, if possible, in several, so as thoroughly to loosen its fibrous connections. An unsuccessful case of Professor Lister's had been mentioned, but it must be remembered that he had previously had very good results from the operation.

In answer to Mr. Hutchinson, he might say that the facial nerve was always stretched at its point of exit from one of the foramina-mental or infra-orbital, and good results might follow, even though the seat of pain might be referred to a point higher up.

It was difficult to judge from the published records of the relative value of stretching and of the division of nerves, but he thought that the loss of sensation which must follow the latter operation must always be more or less of an inconvenience, and that therefore stretching should be tried first, and section kept as a last resource.

The PRESIDENT then proposed that a vote of thanks should be given to Mr. A. S. Underwood for his paper, and to the other members who had contributed specimens and communications that evening. This was unanimously agreed to, and the meeting terminated.

ON THE COMPARATIVE VALUE OF SULPHURIC ACID AND CREOSOTE IN THE TREATMENT OF ALVEOLAR CARIES.

READ BEFORE THE BROOKLYN ANATOMICAL AND SURGICAL SOCIETY BY
J. N. FARRAR, M.D.

When or by whom creosote was first used in the treatment of alveolar caries I am not able to say; but as to sulphuric acid, as well as nitric acid, we find, according to Heister, who wrote in 1718, one hundred and sixty years ago, that it was then in use in the treatment of necrotic conditions

of the jaw-bone. Since that time it has been more or less advocated, but with somewhat more interest after the report of Mr. Pollock's experiments in 1868-69, published in the *Lancet*.

For several years past, and until of late, the use of sulphuric acid, more especially in the form of elixir of vitriol, has been advocated by a few members of the dental profession, as the treatment *par excellence* not only for necrosis, but for alveolar abscess, the hypothesis set forth as positive theory by these gentlemen being that "acid would vigorously act to remove all the dead bone present without acting upon the surrounding living bone."

To test the real degree of virtue of aromatic sulphuric acid, I made, in 1866-7, a long series of experiments with not only this form of acid preparation, but various degrees of aqueous solutions of all sorts of sulphuric acid, the commercial (always impure*), the Nordhausen, and the absolutely pure ordinary acid (prepared especially for my use). These experiments numbered about two hundred, made with great care, consuming almost all of my spare hours, days and nights, for over a year, and were not only made upon all conditions and forms of lifeless bone, but included vivisection experiments on sheep. The results showed that aromatic sulphuric acid has little or no effect for disintegrating bone of any sort, and that while dead bone long enough subjected to aqueous solutions will be affected by them, they act equally vigorously upon living bone; thus proving beyond doubt that however plausible and however desirable the hypothesis set forth, it had but very little scientific foundation.

Sulphuric acid is highly recommended by some persons for universal use in all conditions of abscess; but while it will frequently lead to fair results, and while it is undoubtedly to be preferred to creosote in cases of necrosis, I do not think its indiscriminate use in the treatment of simple abscesses, even though it be slightly antiseptic, is in accordance with the highest scientific principles.

Creosote has all the desired properties of sulphuric acid, which are indicated in the treatment of simple abscesses, with far superior antiseptic qualities: and as alveolar abscesses are not, as a rule, accompanied by necrosis proper, the former is superior for general use.

Even in the cases where acid is indicated, the final dressings, after the dead bone has been removed, may profitably be made with wood creosote, in order to secure its great antiseptic virtues, for the dead root is ultimately to be clothed like an encysted foreign body by the encroachment

* Sulphate of potassa, sulphate of lead, hyponitric acid, arsenic and chlorine are the usual impurities found even in the best commercial acids.

of the alveolar walls or the intermediate softer tissues, either by contracting around it, or by granulations or otherwise, thickened so as to embrace it.

Two varieties of creosote should be considered: escharotic and non-escharotic. Wood creosote is practically non-escharotic, and while this form may be superior for some cases where it is not desirable to destroy tissue, I think it is not equal to the other form in early stages of treatment, when destruction of the interior of the sac is indicated.

While creosote preparations are thus highly recommended for general abscess treatment, it is of the utmost importance that a correct diagnosis be made. Should there be even slight necrosis present, the solution of the dead bone, so important to a final cure, will, for the time, be apt to be arrested by the use of creosote. I have known cases to be only apparently cured by this mistake. The disintegrative process and pus-formation for a time being arrested, and the fistula closed, there is produced what may be termed a "false cure," which remains only so long as the effect of the creosote prevents further decomposition of the dead tissue.

It is sometimes a nice point to determine whether there be necrosis present or not, when very limited in extent and difficult of access; but skilled examination will generally reveal by means of a delicate probe the difference between living and dead bone. Should there be, however, a doubt in the diagnosis, with strong suspicion of necrosis, it would appear to be a proper rule to give such cases the benefit of the doubt and treat with acid, the form and strength depending upon circumstances.

Having briefly considered the comparative virtues of the two kinds of creosote, let us confine our attention more especially to the acid aspect of our subject. Sulphuric acid—of which there are two varieties, the ordinary (H_2SO_4) and the Nordhausen ($H_2SO_4SO_3$)—in its pure state, has not to my knowledge been employed in practice; but the aromatic form known as "elixir of vitriol" has been in general use, as before stated. But in order to obtain a more vigorous action, various degrees of aqueous dilution of the pure acid have been thought to be more efficient in stubborn cases, where dead bone is associated. There are, however, some considerations respecting the acid treatment which, in my opinion, are of importance. Different and perhaps exaggerated views are entertained in regard to the relative value of the ordinary and the Nordhausen forms. This, however, only applies to the difference in degree of strength, and both may be used under the above modifications in aqueous solution; but in alcoholic (aromatic) solutions the Nordhausen is stronger, and acts more vigorously to destroy living soft tissues.

Chemical experiments upon dead tissue, outside of the living organism, as illustrative of similar conditions in the living, are always open to criticism, often absurd, especially in the direction of physiological chemistry. The chemical action of acids, even upon dead bone in and among living tissue, has been, and is by some people now, supposed to be somewhat different from their action upon outside dead matter.

How much and in what way so-called "vitality" influences the action of chemical agents is not well known. I will not attempt to discuss the question. Many of these physiological queries are sometimes satisfactorily answered, but only on the basis of hypothesis. It is my belief that the difference in conditions of experiments is not so much a difference of kind of chemical action as a difference in the degree. We have dead and dying ossific tissue, and wish to prevent further extension of death, and get rid of the dead portion. What shall be done? Is there anything that will, when applied locally, hasten decomposition of the dead bone, and at the same time stimulate diseased living tissue to healthy action? Can any acid be made to dissolve it or not? And if so, will it dissolve the dead bone without acting similarly upon the living bone; and if so, can it be used in sufficient strength without injury to the surrounding soft tissues; and if so, to what degree and what preparations are best for practical use? Some of these questions I have already partially answered. Of course, in my remarks, it should always be borne in mind that systemic treatment, such as food and sunlight, have their influences in the formation of the "line of demarkation," as well as that of judicious general medical treatment.

Experiments show that necrosed bone may be acted upon, other things being equal, as well *within the jaw as without*; but in actual practice "other things" cannot be made equal; therefore allowances must be made—and great allowances, too. So far as the action of acids upon dead bone is concerned, we have the matter in a nutshell. Experiments show that necrosed bone can be dissolved by the use of some solutions of acid, but these experiments have led me to conclusions somewhat at variance with those generally held, especially in regard to the degree of value of the different forms of sulphuric acid. The unavoidable surrounding conditions in actual practice necessarily retard, if they do not interfere with, the action of chemical agents applied from without, even if an effort to retain them in place by the Heister method of the use of the tents of lint or cotton be made.

A sequestrum placed in a bottle containing an abundance of aqueous acid solution (although not at first) will, after from two to four hours,

show decided chemical action upon it ; but in practice, if we apply the same drug in the treatment of necrosis, the quantity must necessarily be very limited and also weak. The presence of detritus in and around the necrosed parts, and the natural secretions of the same, will so soon dilute and drive out this small quantity as to materially reduce the degree of chemical action.

These hindrances, added to the lack of time required to obtain full action of the acid in actual practice, would lead us to infer that if the soft tissues would tolerate it, a stronger solution would be necessary to accomplish the same degree of chemical action which a larger quantity of a weaker solution would do in the laboratory. A solution of about four parts of water to one of acid will not act upon necrosed tissue in the living jaw more than, if indeed as much as, a solution of about nine parts of water to one of acid on similar bone outside of the body, if kept at the temperature of the blood. Therefore, it would be natural to infer that to obtain more active results, the local application of acid in practice should be frequent. But the action of pure acid being very destructive to living tissue, we are obliged to use weaker forms in practice. But a strength of solution that will not destroy living tissue is so weak that, under the difficulties mentioned, it will not have so much disintegrative effect upon necrosed bone as at first might be supposed, unless the necrotic portion is sufficiently exposed to apply the acid directly upon it without coming in contact with living tissue—a condition of circumstances which probably would be better treated with a steel excavator. Yet there is no doubt that the frequent and long-continued use of some forms of solutions of acid will hasten somewhat the decomposition of dead bone, leading to an earlier cure ; but whether this decomposition is from direct chemical action on the bone itself or through the increased activity of the vital process carried on by nature, is the question.

If we apply any of these solutions, even the aromatic sulphuric acid, to a case in practice where the necrotic portion can be observed, slight effervescence is noticed to take place for a short time. Now, in the natural decomposition of necrosed bone, the secretions are constantly holding in solution more or less of lime salts, and the carbonate coming in contact with sulphuric acid causes slight effervescence ; but it does not extend much beyond the time necessary to change the lime in solution in the pus-detritus ; this phenomenon is what has led to the erroneous supposition that it was demonstrative proof that the acid acts vigorously upon the bone itself.

Proof additional that the bone is not vigorously acted upon lies in the

fact that, if we subject a piece of necrosed bone in the laboratory to pure aromatic sulphuric acid for three days and three nights, at 37.8° C., we will find, after re-weighing, that it has lost nothing; and while such bone, similarly treated with aqueous solutions of sulphuric acid of equal strength, will in the end be destroyed, the action is so slow at first that the change can only be seen after one or two hours. If this be so, it will readily be seen that, with all the hindrances mentioned in actual practice, we cannot depend much upon its direct chemical action upon bone itself, and upon close observation it will be found that the chief benefit from the acid treatment lies in the stimulation to the surrounding living parts which it effects, thus assisting Nature in her efforts to establish the line of demarkation, the formation of granulations behind the sequestrum leaving the dead bone in a condition to be more easily removed by instruments, and in cases where the sequestrum cannot be reached not preventing its natural decomposition, as would be the case if impregnated with creosote.

As to the comparative value of the aqueous solutions with the elixir of vitriol, circumstances must decide. While in most ordinary cases the aqueous solutions that will not destroy surrounding soft tissues must be so weak, there probably is but little if any difference. But where the bone is accessible, so that solutions may be applied without coming in contact with living tissues, stronger ones, even to the strength of one of acid to four of water, may be sometimes beneficial; but the action of sulphuric acid upon bone is so slow, that the more experience I have with it, the less faith I have in it as a disintegrator of necrosed bone.

ON THE BEHAVIOR OF PLASTER OF PARIS IN SETTING.

BY W. BOWMAN MACLEOD, L.D.S., EDIN.

(From the Transactions of the Odonto-Chirurgical Society.)

The subject of the communication which I have now the honor of laying before this Society is, "On the Behavior of Plaster of Paris in Setting." Its intention is to bring under your notice the results of several experiments entered into for the purpose of demonstrating, by practical examples, to my class, the minute amount of expansion which takes place during the setting of plaster of Paris, such as we ordinarily use in the laboratory, and which resulted—in so far as I was concerned—in drawing my attention to another characteristic which has hitherto been

unsuspected, and if suspected, not sufficiently acknowledged as a factor in dental mechanics. The presence of this peculiarity has, I believe, in many cases, produced faults in modeling and fitting which have been attributed to other causes ; and, a remedy having been sought for in the wrong direction, has not hitherto been found. I refer to the rocking of plates upon the middle line of the palatine arch, the general misfit of plates, and the opening of the joints in gum blockwork. To prove that plaster expanded, I cast a quantity of it within a square of two feet, the sides of which were enclosed with iron plates three-quarters of an inch in depth, and closely fitted together but unattached, supported by angle ties, and retained in position by a piece of cord tied round their outer circumference. The plaster was cast within this area, and as it set sufficiently to hold itself together, the cord was cut, and the mass allowed to crystallize without being bound laterally. On measuring this block the following day, I found that it had increased by five-sixteenths of an inch in length, and the same in breadth. This being reduced proportionally to the average breadth of the dental arch, would certainly have made very little difference, practically, in the fitting in the majority of cases, being only the one-thirty-seventh part of an inch of expansion on the average denture. But I found that not only had the plaster expanded, but the upper surface was raised ; and on sawing the block through in a diagonal direction, I found that instead of the block lying dead upon the plane beneath, it presented a concave surface toward the plane, the highest point of which measured one-half inch. This showed, first of all, that the plaster had not only expanded, but had done something more than its now greater length and breadth would lead one to suspect ; for in thus taking a concave form, it must have either retracted to an equal extent, or expanded in an irregular manner, causing warpage.

Making still further experiments by casting plaster in the ordinary impression cup, I found, invariably, the same result produced, and that the centre portion—the palatine portion—of the cup always presented an open and well-defined space between the upper surface of the impression cup and the lower surface of the hardened plaster. This circumstance, therefore, would produce in your model a fault similar to that resulting from the sucking of the waxy or resinous impression materials, and, as you can readily see, would give you a much higher dome than that of the natural arch. Hence the rocking of the plate, which has hitherto been attributed—if my deductions be justified—to every cause but the right one. Continuing my researches, I found that although in the equal surface and depth of the modeling tray, the defect always ran in one

direction, yet on pouring the plaster into irregular moulds, such as the impression of the mouth, the position of the point of warpage was not always persistent, but seemed to be controlled by the thickness of the superincumbent layer of plaster, and this led to the conclusion that while in some instances the defect would determine itself on the palatine ridge in the shape of an exaggerated dome, at other times, and that more frequently in under dentures, it would express itself in irregular lateral expansion, and consequent misfit upon the posterior portion of the alveolar ridge. Naturally, then, I began to inquire how this defect might be overcome, and I find that by the addition to the water with which the plaster is mixed of potash alum (hitherto used entirely for the purpose of quick setting in impression taking), in the proportion of from three to four ounces to the gallon, you will entirely overcome the irregular expansion and consequent warping which takes place in coarse plaster of Paris as used with water alone. But here you have the two blocks of equal dimensions—one cast with water, and the other with potash alum water. It requires no explanation on my part to point out the difference between the two. In the one case, the expansion is five-sixteenths of an inch ; warpage, one-half inch. In the other, expansion, *nil*; and warpage, ditto ; and the two surfaces, dead. You have here a series of impression cups of various sizes and shapes, filled with plaster, cast with pure or plain water, and with potash alum, and which require but to be examined to convince you of the fact of the deadness of plaster of Paris when treated with potash alum, and its behavior under ordinary circumstances. The conclusion I draw from this is, that all plaster, either for impression taking or for models, should be cast with potash alum, when strict and definite results are to be obtained ; and that in the case of gum blockwork, that opening of the joints—which has hitherto caused so much trouble to practitioners, and, to a great extent, has prevented the more general adoption its other merits might have commanded, and which has drawn out many suggestions as to the best mode of prevention—the opening of the joints may now be entirely prevented by the use of potash alum for both matrix and model within the flask.

[Solution of Potash Alum for modeling in plaster of Paris has been used by many for years, but the experiments recorded in the foregoing paper justify us in reproducing it here. Alum of commerce, until late years, was prepared according to the following formula:— $\text{Al}_2 \text{ } 3 \text{ } \text{S O}_4$, $\text{Am}_2 \text{ } \text{S O}_4$, $24 \text{ } \text{H}_2\text{O}$. Manufacturing chemists are now frequently using $\text{Al}_2 \text{ } 3 \text{ } \text{S O}_4$, $\text{K}_2 \text{ } \text{S O}_4$, $24 \text{ } \text{H}_2\text{O}$.—Ed. *M. R. D. S.*]

PEEPS INTO THE MAGAZINES.

By "ALERT."

A paper of considerable interest and that contains a great deal of food for thought appears in the current number of the *Missouri Dental Journal*, from the pen of Dr. C. S. Stockton. Its chief value lies in the persistency with which the writer urges dentists to study art and nature. They owe it to themselves and the world that they do this. We have often felt that the phrase "mechanical dentistry," though representing a very important part of the dentist's work, is yet a somewhat unfortunate one. The fact is that in the so-called mechanical part of the dentist's work there should be the least mechanical treatment—in other words, there should be the least possible tendency to follow a rule of thumb, which rule is strongly implied in the word "mechanical." Kepler said: "I think Thy thoughts, O God!" and those who have always been the furthest away from a perfect realization, a thorough appreciation of nature, and art as manifested in nature, will not understand that Kepler's words were something more than a mere boast—that they were the result of an outburst of the sincerity of a great soul. We do not suggest a substitute for the phrase "mechanical dentistry." We simply urge that "mechanical dentistry" is and it is not mechanical; it is mechanical, but it is (or should be) artistic also.

And now a passing word of criticism. Dr. Stockton makes the startling asseveration that "Milton could never have written 'Paradise Lost'" had he "not first well masticated and digested good English beef, requiring jaws in good repair, under the solicitous surveillance of a dentist." We question whether there were any "dentists" whom Dr. Stockton would care to recognize as such in the days of Milton. Then as to the beef question. We have no grounds for assuming that Milton did not eat beef; but is Dr. Stockton aware that Wordsworth and Shelley were vegetarians? Possibly—we think we hear a vegetarian say—Milton would have written something much better than "Paradise Lost" if he had eschewed English beef. This, however, is merely by the way. Let us add that this question of art and dentistry, so pleasantly dealt with by Dr. Stockton, is one that will in the future demand far more attention than in the past, and we hail with pleasure articles of this character, that reiterate such pregnant truths to the members of the profession.

The subject of anæsthesia receives a large share of attention in the magazines lying before us. The *Missouri Dental Journal* deals with it in

several pages, in the shape of a paper read before the New Jersey State Society and a discussion. But our English friends, represented by the *British Journal of Dental Science*, are also devoting some little of their space to it. A somewhat valuable contribution appears in the last-named journal of November 1st, from the pen of Mr. H. Marsh, L.D.S., of England, who, in common with some of his American friends, grapples with the question, What is the physiological action of nitrous oxide gas? He quotes from various writers and experts, but evidently he has not himself come to any decision on the matter, and wisely declines to dogmatize. Mr. Marsh is of opinion that nitrous oxide is the safest and best anæsthetic for short operations that has ever been introduced. He admits that patients incur a risk in taking it, but maintains that they run a much greater risk in crossing the street of being killed by a passing vehicle than by taking gas a dozen times over. Space is limited, or we might quote with advantage the earnest remarks Mr. Marsh makes to his brother dentists to qualify themselves for its intelligent administration.

Far away in Bozeman, Montana, lives an old man eighty-one years of age (we learn from the *Dental News*), and his experience, and that of his children and grandchildren, answers conclusively the question: What shall we do to prevent decay of the teeth? This man went recently to Dr. M. H. Spencer, of Bozeman, to have his teeth examined (though why he did this we fail to see). The doctor "did not find an unsound tooth in his head, neither were there any missing." The mouths of his three children, aged respectively fifty-eight, fifty-four and fifty-one, and his grandchildren also, revealed the same satisfactory state of things. Dr. Spencer made some inquiry in reference to the manner of living of this family, and was told that they never used tea, coffee or sugar, and never ate or drank anything hot or even warm. Are we right in assuming that to this abstinence from what some of us regard absolute necessities of life may be traced the immunity from decay in this worthy family's teeth? While all will admit that very hot drinks are injurious to the dental organs, we must not be led away by *post hoc propter hoc* arguments.

The publishers of the *Dental Luminary*, determined to make their journal more luminous than of yore, have enlarged it to twenty pages. We congratulate them on their enterprise, and also on the cheerful character of their publication and its neat appearance.

We are so accustomed to seeing slavery, bull-fights and blood-letting classed together as mischievous relics of some of our ignorant and cruel progenitors, that it is with some amount of surprise, if not alarm, that we have read an article in the *Practitioner*, by Dr. Harvey L. Byrd, in which

the writer claims for blood-letting "the highest rank as a therapeutical agent." Dr. Byrd does it "in the interests of humanity," and contends that in "all inflammatory diseases" (the italics are Dr. Byrd's), under certain conditions named, "the lancet is the most scientific, as it certainly is the most efficient and valuable agent in our present list of therapeutical resources." In another part of the *Practitioner* we are told that this article is reprinted from a publication issued in Philadelphia in 1872, "at the solicitation of medical friends." We do not discuss the matter—we congratulate Dr. Byrd on his bravery.

In the *Monthly Review of Dental Surgery* (London, Eng.), Mr. M. G. Cunningham advocates the use of "a drop or less of sulphuric acid, either in the palm of the hand or mortar," with amalgam, when filling teeth. He says that then "it will be found that the metals will almost instantaneously amalgamate." We would express the opinion that while the sulphuric acid may hasten the formation of the amalgam, it would not prove advantageous on the whole.

BOOK NOTICES.

CANADA MEDICAL AND SURGICAL JOURNAL. Montreal.—Published by the *Gazette* Printing Co. A useful magazine.

THE TRANSACTIONS OF THE MICHIGAN STATE DENTAL SOCIETY FOR THE 25TH ANNUAL SESSION, published by F. S. Ackerman, Detroit, is a neatly got up book of 84 pages, full of articles and discussions of considerable worth and interest.

WALSH'S RETROSPECT.—A Quarterly Compendium of American Medicine and Surgery. Washington, D. C. : W. H. & O. H. Morrison. This work is entirely composed of valuable selections from the medical and surgical press.

We have received a copy of the Transactions of the Illinois State Dental Society at its sixteenth annual session, held at Bloomington, Ill., in May last. It is admirably printed, and does credit not only to the publication committee (Dr. E. Noyes and Dr. E. D. Swain, of Chicago), but to the Society. Matter and appearance are alike good.

A PRACTICAL TREATISE ON MECHANICAL DENTISTRY. By Joseph Richardson, D. D. S., M. D. Third edition. Published by Lindsay & Blakiston, Philadelphia.

This work, which has been sufficiently long before the public to have its value rightly estimated by them, appears now in a third edition. The revision of the previous edition has considerably enhanced its value, although, as the author admits in his preface, the work contains now at least one chapter the subject of which he considers is doomed, at no distant day, to be classified with obsolete processes. It is impossible for such a work as this to be classical, and although it is now fairly well brought up to the standard of the times, it will ere long need another thorough revision. This treatise is so well known, and as it is in a sense not a new work, but only a re-issue of one that has been of great service to the dentists of to-day, there is no necessity for us to deal at any length with its contents. We cannot but feel that Dr. Richardson has done a service to the profession at large, and one which they will not be slow to recognize.

MERRIMAC VALLEY DENTAL ASSOCIATION.

The above Association held its eighteenth annual meeting in Plummer Hall, Salem, Mass., on Oct. 4th.

Dr. G. F. WATERS, of Boston, read an essay upon "Arsenical Poisoning and its Remedies," claiming that chloride of zinc and diluted sulphuric acid were good antidotes.

Dr. W. PORTER, of Salem, read a paper upon "Dental Education," and Dr. J. Guttman, of Great Falls, N. H., one upon "How to Make your own Instruments."

At the evening session, the subjects "Preparatory Fillings," and "Cases of Office Practice," were discussed. Dr. Andrews, of Cambridge, exhibited a specimen consisting of the portion of a root of a tooth which had remained in the jaw, completely enveloped for over thirty years, and upon which new osseous deposit had formed. Dr. Baker, of Boston, exhibited a new set of ivory-pointed instruments, for packing gold. Dr. Guttman, of Great Falls, showed an appliance for the use of students who are learning to fill teeth. Dr. Dudley, of Salem, made a report upon the subject of "Näboli," and resolutions were unanimously adopted adverse to its use.

Officers for the ensuing year were elected as follows :

President, Dr. C. H. Osgood, Boston : Vice-Presidents, Drs. T. W.

Clements, Manchester, N. H., R. R. Andrews, Cambridge; Secretary, Dr. H. W. Coburn, Lowell; Treasurer, Dr. G. A. Gerry, Lowell; Librarian, Dr. G. F. Waters, Boston; Executive Committee, Drs. J. B. Coolidge, Boston, L. Rideout, Lynn, S. J. McDonald and H. A. Baker, Boston, T. W. Clement, Brookline.

It was resolved to hold the next meeting in Boston.

NOTES.

Nitrous Oxide.

The New York *Sun* has been collecting information on the effect of nitrous oxide on dentists' patients. It comes to the conclusion that the "universal effect of the gas is to intensify the natural disposition of the person who takes it. A man of pugnacity will become more belligerent for the moment. Hilarious persons are exceedingly jolly—nervous people are apprehensive of danger." The *Sun* records the case of a man in Waterville, Me., who after the extraction of a tooth (gas having been administered) aimed an ugly blow at the dentist's head. The innocent practitioner dodged, however, and the patient's knuckles struck the wall. Other anecdotes are given by our bright contemporary, which go to prove (what every operator knows already) that the effects of the gas are by no means uniform, but vary according to the peculiar temperament of the patient. All this is *apropos* to an article published some time since, from a valued contributor in New York State, who had a musical box and was accustomed to set it playing as he was about to administer gas to his patients. He advocated this practice, saying that he and his patients had profited greatly by it.

Mechanical Dentistry.

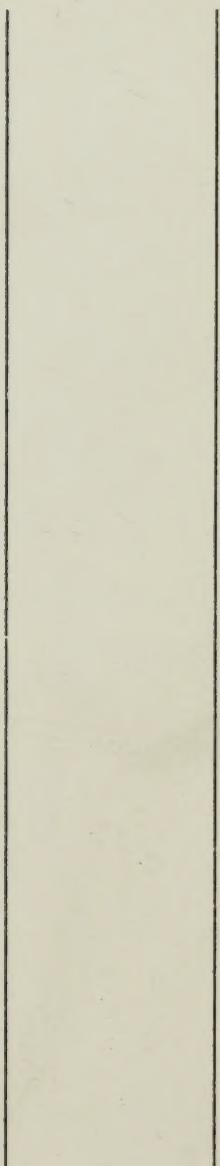
However much American dentistry may surpass European, there are undoubtedly some very excellent mechanical dentists in England. We find, how-

ever, with pleasure, that some of the best of them are dissatisfied with their present attainments. In an address before the London Dental School, Dr. Walker recently observed that the highest aim of the mechanical dentist must be to adapt the artificial denture to the individual countenance. It could not be made according to any rule of thumb. As no two faces were alike, he maintained, so the teeth of no two persons were precisely similar, and it was only after a careful survey of the peculiarities of the person to be treated that success could be hoped for in the application of artificial teeth. These hints are very important, and force on our minds more than ever the fact that a dentist must be not only a mechanic, but an artist.

Dark Joints in Gum Sections.

Dr. D. T. Hill, of Cornwall, N. Y., writes us in regard to the best way to prevent dark joints in gum sections of rubber teeth. He says that he knows some operators who use plaster, others preparations of zinc, while others pack tin foil on the back of the open joints. Some who claim to be authorities on mechanical dentistry, say that the joints should be made so nicely that rubber cannot find its way through; but that is more easily advised than accomplished. Dr. Hill says that he finds Dr. Metcalf's Insoluble Enamel, if used quite thin and allowed to stand until tolerably hard before packing, settles the difficulty.

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